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TRANSFORMING MEDICAL COMPETENCY INTO MEDICAL MANAGEMENT CAPABILITY: DEVELOPING PHYSICIAN LEADERS BY FINDING MANAGEMENT IN MEDICINE

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Transforming Medical Competency into Medical Management Capability: Developing Physician Leaders by Finding Management in Medicine

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Working together

By David Whyte

We shape our self
to fit this world

and by the world
are shaped again.

The visible
and the invisible

working together
in common cause,

to produce
the miraculous.

I am thinking of the way
the intangible air

traveled at speed
round a shaped wing

easily
holds our weight.

So may we, in this life
trust

to those elements
we have yet to see

or imagine,
and look for the true

shape of our own self,
by forming it well

to the great
intangibles about us.

ABSTRACT

Background

Management thinking has made inroads into health care, but the relationship between medicine and management is often described as one of competing logics. Given a recognized need for bridging the two logics, studies have been conducted to better understand the role of clinicians in the leadership and management of health care. Several reviews have concluded that clinically trained leaders have a positive impact on hospital performance. While management and leadership competencies have been incorporated into all levels of medical education and training, research suggests that current medical leadership development practices yield limited success. The ever-changing health care context expects medical leaders to learn how to use and adapt their medical competencies in uncertain environments to address unfamiliar challenges, i.e. develop medical management capabilities. Leadership development programs which engage physicians in addressing complex challenges of health care, are pedagogically sound, and resonate with the professional ethos of the physician role warrant research and development.

Aim

The aim of this thesis is to deepen the understanding of how to better develop medical management capabilities of physicians and to apply this understanding in the design and evaluation of a leadership development program that is anchored in medical practice.

Methods

This thesis is an action research project conducted in a learning partnership with the Karolinska University Hospital. It resulted in the design, delivery, and evaluation of a medical leadership development program. This thesis is comprised of three sub-studies that combine multiple qualitative methods for data collection and analysis.

Study I explored the qualities and capabilities effective physician leaders attribute to their success in leading change and how they developed these. It was based on twenty in-depth semi-structured interviews with emerging and senior health care leaders in Sweden and the design was informed by Appreciative Inquiry.

Study II systematically explored conditions that can either facilitate or impede the influence of medical leadership on organizational performance. The systematic review included seventy-three empirical studies and literature reviews which were analyzed using thematic synthesis.

The findings of Study I and II were combined with seven observations (42.5 hours) and interviews with prospective program participants in order to develop a program theory about medical leadership development and articulate Context-Intervention-Mechanism-Outcome (CIMO) configurations. This resulted in a design for a medical leadership development program for Patient Flow Managers. In Study III, a realist evaluation design was used to explore the CIMO configurations and program theory. It utilized prospectively and retrospectively collected data from direct program observations (30 hours), program team participatory observation notes, two post-program focus group interviews (n=12), and participants' summative evaluation forms in order to unpack the underlying mechanisms of

participants' learning processes. A revised program theory for medical leadership development was formulated.

Findings

Study I suggests that medical leaders who make positive contributions to health care organizations and systems are driven by a purpose to improve health care and exhibit qualities of endurance, positive outlook, and authenticity. They ground management in medicine by understanding the medical consequences of managerial decisions and employ a scientific approach to understanding problems and measuring progress. They engage others and act on interdependencies. Such qualities and capabilities are developed as a result of a diversity of work experiences, reflection, and an organizational environment that nurtures learning and ambition. Educational initiatives add value when they are integrated with practice.

Characteristic of thematic synthesis, Study II proposes a hypothetical model that comprised of a virtuous cycle of management through medicine and a vicious cycle of medical protectionism. The virtuous cycle illustrates how willing leaders, when supported by leadership development embedded in quality improvement, are likely to foster participatory leadership practices that cultivate medical engagement. The vicious cycle illustrates how incidental leaders, less interested in their own development, tend to adopt and mimic historically dominant management approaches, i.e. management through command and control, which leads to medical disengagement and perpetuates the risk of recruiting incidental leaders.

The leadership program for Patient Flow Managers, *Leading in Complexity*, was delivered as part of an action learning program. Through three iterations, a total of twenty-eight physician managers worked in small groups to address their leadership challenges. The program provided a space to connect around improving everyday operations supported with theory and evidence from medical management research.

The revised program theory, presented in Study III, suggests that in the context of a university hospital, medical leadership development needs to be supported as a deliberate practice of grounding management in medicine, permeated by psychological safety, a learning orientation (cultivating a growth mindset, surfacing and challenging mental models, establishing routines for learning, supporting presence, and metacognitive processes), and a scientific mindset. The program should be anchored in participants' everyday challenges and embedded in the organization's strategy as new ways of leading operations and improvement are being developed, studied, and assimilated.

Conclusions

This thesis looks anew at the relationship between medicine and management. When jointly purposed to improve health care, they have now a clearly established value in what they together can create for health systems, service providers, and patients. Medical competency can be transformed into medical leadership capability by grounding management in medicine through deliberate leadership practice permeated by psychological safety, learning orientation, and a scientific mindset. The research process employed in this thesis implies that action research collaboratives around university hospitals' leadership and organizational challenges could be created to design responses to complex challenges while contributing to the scientific body of knowledge in medical management.

LIST OF PUBLICATIONS

I. **Savage, M.**, Storkholm, M. H., Mazzocato, P., & Savage, C. (2018). Effective physician leaders: an appreciative inquiry into their qualities, capabilities and learning approaches. *BMJ Leader*, *2*(3), 95–102. https://doi.org/10.1136/leader-2017-000050

II. **Savage, M.**, Savage, C., Brommels, M., Mazzocato, P. (2020). Medical leadership: boon or barrier to organizational performance? A thematic synthesis of the literature. *BMJ Open* 2020;10**:**e035542. https://doi.org/10.1136/bmjopen-2019-035542

III. **Savage, M.**, Palm, K., Stenfors, T., Brommels, M., Mazzocato, P. Uncovering the learning process in medical leadership development: a realist evaluation. *Manuscript*

Related publications

1. Storkholm, M. H., Mazzocato, P., **Savage, M.**, & Savage, C. (2017). Money's (not) on my mind: a qualitative study of how staff and managers understand health care's Triple Aim. *BMC Health Services Research*, *17*(1), 98. https://doi.org/10.1186/s12913-017-2052-3

2. Rasmussen-Barr, E., **Savage, M.** and Von Knorring, M. (2018) How does leadership manifest in the patient–therapist interaction among physiotherapists in primary health care? A qualitative study, *Physiotherapy Theory and Practice.* https://doi.org/10.1080/09593985.2018.1474984

Related master thesis projects

1. Mulondo, J. (2016). *Leading change in health care: a narrative study in Sweden.* Master's of medical science in Health Economics, Policy and Management. Karolinska Institutet. Stockholm, Sweden.

2. Karu, G. (2016). *Conceptualizing management among clinical and non-clinical managers at the North Estonia Medical Centre.* Master's program in Human Resource Management, Tallinn Technical University. Tallinn, Estonia.

3. Wärn, A. (2019). *Exploring first line physician managers' perceived work experiences: a mixed methods study in a university hospital in Sweden.* Master's in medical sciences in Health Economics, Policy and Management, Karolinska Institutet. Stockholm, Sweden.

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LIST OF ABBREVIATIONS

AI	Appreciative Inquiry
CIMO	Context-Intervention-Mechanism-Outcome
DDOs	Deliberately Developmental Organizations
PFC	Patient Flow Manager

PROLOGUE

Often, PhD candidates are recruited to pre-defined research projects. I had the privilege, and the challenge, to develop this project from scratch as an aspiring PhD candidate. It represents a juxtaposition of fields I care deeply about: leadership, learning, and the future of our health systems. Every choice regarding study design and research questions has been impacted by my own personal experiences with these fields, i.e. my interest has not been purely academic. In fact, during my undergraduate studies, I grew increasingly cynical about academia. I was young and restless to change the world, and could not see how intellectual conversations and writings would ever get me there. There's got to be a better way, I thought.

And there was. In my twenties, I had some of my most formative experiences with leadership and learning, and they have had a profound impact on the choices I made in this thesis. They can be attributed to my decision to join an international student organization during my undergraduate studies, AIESEC, which threw me into increasingly difficult national and international leadership roles. Given the organization's focus on youth leadership and its own ongoing global change processes, I was exposed to all the leading theories of leadership and complex change. This is the place where I not only read the works of Peter Senge (founder of the Society for Organizational Learning), Otto Scharmer (Theory U), and David Cooperrider (Appreciative Inquiry), but also facilitated a global transformation involving thousands of young people around the world applying these theories in practice; witnessing the fruits and drawbacks first-hand. In three intense years, I had learned about and applied cutting-edge management and leadership theories and tools.

Upon completion of my bachelor's in political science, I decided to make use of all these experiences and immerse myself in the challenges of the then spiraling HIV-epidemic in Estonia. I became the executive director for a social enterprise that engaged the business sector in HIV prevention and advocacy. This led me to pursue a master's of medical science in health economics, policy and management at the Karolinska Institutet. The quality of the program challenged all my cynical views about the usefulness of academia and inspired me to pursue doctoral studies.

The implication of these formative years was that I dedicated myself to pursue a PhD project that addresses the challenge of developing medical leadership with scientific rigor *and* a practical application. As action research is often characterized, I was committed to "*design the plane while flying it*" (Coghlan & Brannick, 2014). This thesis with its accompanying articles is an attempt to give a comprehensive account of the loops and spirals I have made in this iterative and experimental *flight*.

1 INTRODUCTION

Technological advancements and an aging population with multiple chronic conditions are making the delivery of health care increasingly complex. Research and development continuously push the boundaries of what is possible and contribute to an ever-growing ambition to improve. This takes place in a context were resources are limited and often fiscally unsustainable, i.e. spending on health outpaces economic growth (Organisation for Economic Co-operation and Development (OECD), 2015).

It is thus no surprise that management thinking, traditionally focused on the management of industrial production, has made inroads in health care. The challenge of providing high quality and accessible care with limited resources is universal, but the solutions to address it vary (e.g. Total Quality Management, Lean, and Value-Based Health Care) and what is popular is constantly changing (Walshe, 2009). Furthermore, studies on the implementation of these management approaches illustrate that subtleties within them are often lost when they are translated into medicine (Fredriksson, Ebbevi, & Savage, 2015). For example, Lean has been reduced to six "rules" (Mazzocato et al., 2014) or a collection of tools and techniques – absent its core philosophical and leadership underpinnings (Mazzocato, Savage, Brommels, & Thor, 2010). The importance of high quality management practices in medicine is further emphasized by studies that demonstrate their association to lower mortality rates and better financial performance (Lega, Prenestini, & Spurgeon, 2013). Management practices in isolation are nevertheless not enough, they need to be combined with an understanding of medicine. In concert, they can significantly improve the chances for better performance, such as when clinically qualified managers are coupled with medical engagement in management processes (Ham, 2003; Lega et al., 2013). Thus, the relationship between medicine and management needs a new approach (Kuhlmann & Knorring, 2014). This project explores how this could be facilitated through a leadership development program that strives to improve medical management capabilities.

2 BACKGROUND

Before elaborating on the theoretical and conceptual background relevant for this thesis, it may be helpful to clarify some key definitions. In this thesis, the focus lies on medical *management* and *leadership*. These are used interchangeably. Throughout the thesis, one can observe that as pages go by, medical leadership becomes preferable over medical management (Berghout, Fabbricotti, Buljac-Samardzic, & Hilders, 2017). More than anything, it reflects the preference observable in the published literature in the field (Savage, Savage, Brommels, & Mazzocato, 2020). The same goes for the choice of *medical* over *clinical*. While clinical is often used as reference to all professions involved in clinical practice, medical is used to highlight the specific focus on physicians in this thesis.

To those readers insistent on differentiating between management and leadership, while this may possibly be important in the context of some studies, in this thesis, management and leadership are seen in the way they tend to materialize in practice – as complementary and interdependent in the ways practitioners meet their everyday challenges (Blumenthal, Bernard, Bohnen, & Bohmer, 2012). Thus, in the context of this thesis, medical leadership is defined as physicians' continual pursuit to improve the quality and efficiency of the core work of medicine, independent of their formal authority or role (Blumenthal et al., 2012; Savage, Storkholm, Mazzocato, & Savage, 2018).

2.1 THE NEED FOR PHYSICIAN LEADERS

The relationship between medicine and management has been described through competing interests and logics (Glouberman & Mintzberg, 2001). For example, the different ways of viewing and addressing the same problems have led to conflicts and quick-fixes driven by a desire among physicians to maintain the current care processes and among managers to maintain appearances of being up-to-date on management trends (Choi, 2011; Kitchener, 2002). One way to bridge the logic divide between managers and health professionals is to

develop managers well-versed in the language of both lines of thought. These *hybrid managers* can act as "two-way mirrors" to integrate the competing logics of management and medicine (Llewellyn, 2001). These individuals become *medical management knowledge brokers* with the competencies necessary to be critical and at the same time, if deemed valuable, capable of adapting approaches foreign to the medical domain as suggested by consultants, politicians, and others (Burgess & Currie, 2013).

Given the recognized need for bridging the two logics, studies have been conducted to better understand why and how clinicians should play a role in the leadership and management of health care. A systematic review that "mapped out and critically appraised quantitatively-oriented studies investigating clinical leadership and hospital performance" concluded that the inclusion of clinically trained leaders (primarily physicians) as members of the Executive Boards (e.g. as CEO or Medical Director), Board of Directors, or Quality Committees, has an overwhelmingly positive impact on hospitals' performance (Sarto & Veronesi, 2016). These performance dimensions include quality of care, management of financial and operational resources, and social performance (the level of social responsibility that an organization displays towards its community). A few of the included studies did find negative impacts on the management of financial and operational resources and social performance. A more recent review concluded that physician-led hospitals do better in terms of care quality and patient satisfaction, but worse in financial performance, preoperative waiting times, and adherence to clinical guidelines (Kaiser, Schmid, & Schlüchtermann, 2020).

As a conclusion of their review, Sarto and Veronesi suggest an explanatory model for the relationship between clinical leadership and hospital performance (Figure 1) (2016).

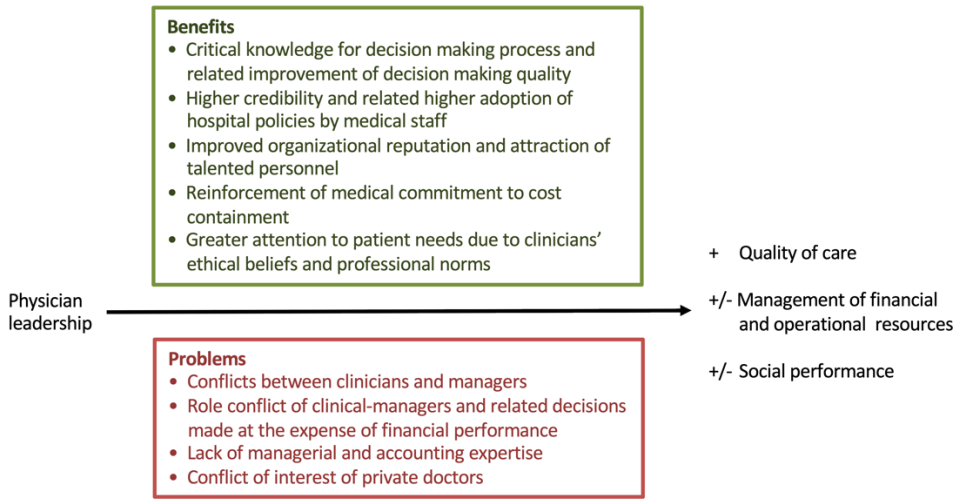

Figure 1. An explanatory model of factors that mediate the positive and negative effects of physician leadership. Adapted from (Sarto & Veronesi, 2016).

According to the model, the mechanisms that mediate positive performance outcomes are primarily tied to clinicians' unique knowledge, credibility, and professional norms. When the outcomes have been negative, it is attributed to clinicians' lack of managerial and accounting competence, and the inherent clinician-manager role conflict where clinicians are assumed to always base decisions on patients' best interests (Sarto & Veronesi, 2016).

In addition to formal leadership roles, it has long been argued that physicians need leadership and management competencies in their everyday clinical practice with patients, leading care teams, and contributing to improving health care, i.e. medical engagement (Spurgeon, Mazelan, & Barwell, 2011). To address this need, numerous competency models that target the undergraduate (basic medical training), graduate (specialist training), and continuing professional development, i.e. all levels of medical education, have been introduced.

2.2 COMPETENCY MODELS FOR PHYSICIAN LEADERSHIP

Most competency-based curriculums for medical education have incorporated competencies tied to leadership and management. The overall logic of competency models can be described as generic (Combes & Arespacochaga, 2012; Frank, Snell, & Sherbino, 2015), management/leadership development oriented (National Center for Healthcare Leadership, 2006; NHS Leadership Academy, 2013), or as focused management/leadership competency frameworks, which cover only a few specific aspects of leadership/management (e.g. Indicators of Quality Leadership). These models target all levels of medical education.

A synthesis of some of the most influential competency models (American Hospital Association's Physician Competency Development; CanMEDs; NCHL Health Leadership Competency Model; NHS Healthcare Leadership Model) results in the following groups of leadership and management related competencies: working with others; organizational development and innovation; resource management; system oversight; leadership; and personal development (Table 1).

Table 1. Description of leadership and management related competencies reflected in selected competency models. Based on (Combes & Arespacochaga, 2012; Frank et al., 2015; National Center for Healthcare Leadership, 2006; NHS Leadership Academy, 2013).

COMPETENCY GROUPS	DESCRIPTION
WORKING WITH OTHERS	• Work effectively as a team member within an inter-professional health care team • Effective communication including conflict resolution and negotiation skills • Ability to collaborate with professions from other disciplines within and surrounding health care (such as social workers, insurance, and governmental agencies) including developing and maintaining networks (relationship building) for coordinated care delivery
ORGANIZATIONAL DEVELOPMENT AND INNOVATION	• Initiate and participate in evidence-informed process evaluation and improvement, particularly for increased patient safety • Performance measurement • Develop organizational awareness to identify points of influence • Encourage innovation
RESOURCE MANAGEMENT	• Knowledge about financing of health care (including remuneration, budgeting and organizational funding) and ability to provide cost-conscious and effective care • Management of human resources • Apply evidence and management processes for more effective care • Employ information technology • Balance effectiveness, efficiency and access with optimal patient care
SYSTEM OVERSIGHT	• Describe the structure and function of the healthcare system, including developing an understanding of the organization, administration, finances, and regulatory systems of health and medical care, as well as its governance
LEADERSHIP	• Ability to provide leadership characterized by collaboration, openness, and dialogue with co-workers • Initiate and lead improvement processes and organizational change/transformations • Evaluate the impact of improvement efforts • Facilitate learning for patients, families, students, residents, other health professionals, and the public through feedback, teaching, and mentoring
PERSONAL DEVELOPMENT	• Self-awareness to understand one's role in an organization/system • Self-development to identify and proactively address ones learning needs • Self-management to establish balance between patient care, practice requirements, outside activities and personal life

The synthesis of the competency models reflects a rather comprehensive inclusion of leadership and management related competencies in the context of health care. The models were developed either through a consensus model (expert groups) or a research model (questionnaires), and assume that, if implemented, the medical programs would better cater to the needs of health systems. While the introduction of these competency models is to be welcomed, particularly given the shift towards outcome-based education, they do not seem to be able to demonstrate the hoped-for impact (Hollenbeck, McCall, & Silzer, 2006; West et al., 2015). Possible explanations for this can lie in the way they were developed and applied. Both the consensus and research models typically queried either health care staff or experts about what the target group of the model ought to be able to do or know, often in the form of a questionnaire where the *perceived* needs were ranked. This approach has a risk of capturing too much of the *espoused* ideas about leadership and management instead of competencies *grounded* in medical practice with a demonstrated relevance for better performance (Argyris & Schön, 1978). Therefore, it is relevant to also look at studies on physician leadership.

Another explanation to limited effectiveness of competency models can be that they describe what Boyatzis calls *threshold* competencies – abilities that are required to "get the job done", i.e. expertise, experience, knowledge, memory, and deductive reasoning (Boyatzis, 2008). Effective leadership may instead require certain key *distinguishing* competencies, such as systems thinking, pattern recognition, and emotional and social intelligence (Boyatzis & McKee, 2005). Aspiring and senior physicians were studied in connection with a leadership program at the Cleveland Clinic in Ohio, USA, where it was found that effective leaders most frequently exhibited the competencies of empathy, initiative, emotional self-awareness, and organizational awareness (Hopkins, O'Neil, & Stoller, 2015). In addition, themes such as communication; get buy-in; mission-driven; be respectful and network with others; due diligence; and focus on organizational change were identified as distinguishing competencies (Hopkins et al., 2015). However, wanting to be (aspiring) or having a senior role is not in itself evidence of effective leadership. In addition to the focus on competencies, leader effectiveness and the ability to learn have been found to be influenced by one's qualities (e.g. being open-minded, taking responsibility, demonstrating courage), however, there is only limited research on this in the case of medical leadership (Densten & Gray, 2001; Ehrlinger, Mitchum, & Dweck, 2016; Lord & Hall, 2005).

2.3 LEADERSHIP THEORIES IN HEALTH CARE

While much of the research in medical leadership has focused on establishing the evidence base for the need of leadership in health care and identifying specific leadership and management competencies, the discourse about *what kind of leadership* would be most fruitful has attracted limited attention. Numerous studies have chosen to test existing leadership theories in the context of health care. The theories most commonly studied are transformational and transactional leadership (Bass, 1999; West et al., 2015), situational leadership (Skog et al., 2012), servant leadership (Trastek, Hamilton, & Niles, 2014), and resonant leadership (Boyatzis & McKee, 2005).

Transformational leadership attempts to engage followers in a vision through inspiration and persuasion (Hopkins et al., 2015; Trastek et al., 2014; Xirasagar, 2008). It is very much about having a charismatic leader who puts their own values and vision on center stage. The behavioral strategies used by transformational leaders are to serve as an ideal role-model (idealized influence), inspire motivation, challenge followers to achieve higher levels of performance (intellectual stimulation), and to demonstrate genuine interest in followers' well-being (idealized consideration) (Bass, 1999). The critique in terms of fit to health care lies primarily in the individualized view of leaders (Trastek et al., 2014; West et al., 2015).

Transactional leadership is the most commonly practiced leadership theory in health care (Trastek et al., 2014). It is about providing rewards in exchange of achieving clearly communicated goals and performing clearly defined tasks, or on the contrary, punishing people for not achieving those (Bass, 1999). The underpinning hypothesis is that people need extrinsic motivators – it thus fails to acknowledge the complexity involved in motivation and professional duties (Trastek et al., 2014). .

Situational leadership (Hersey & Blanchard, 1969) has been suggested as a good fit for health care as it allows leaders to adjust their actions to the various clinical scenarios they might face

in their everyday work (Skog et al., 2012). According to the theory, leaders should adapt their behavior (either directing, supporting, coaching, or delegating) to the situation and the level of experience and understanding of followers (Skog et al., 2012).

While situational leadership attempts to match leaders' behavior to the type of situation, *servant leadership* (Greenleaf, 1977) focuses on the intention to serve the needs of others. It has an inward orientation and uses self-reflection and self-awareness to develop one's clarity of purpose and core ethical and moral beliefs (Trastek et al., 2014).

Resonant leadership has at its core emotional intelligence – "the ability to perceive and express emotion, assimilate emotion in thought, understand and reason with emotion, and regulate emotion in the self and others" (Boyatzis & McKee, 2005). It suggests that practices such as mindfulness, hope, and compassion are able to generate renewal and sustain effective leadership over time (Boyatzis & McKee, 2005). It is argued that emotional intelligence competencies are highly relevant for clinicians as they help them move away from a view of themselves as lone healers and instead create a culture of collaboration (Hopkins et al., 2015; Mintz & Stoller, 2014; Taylor, Taylor, & Stoller, 2008).

While the abovementioned theories can be helpful for triggering reflections about the kind of leadership one aspires to practice, they all focus on individual leaders as opposed to helping health care organizations meet their current challenges (Lieff & Yammarino, 2017). A growing awareness of the increasing complexity of health care has triggered an emerging view of health care organizations as complex adaptive systems (Plsek & Greenhalgh, 2001). This has led to the search for leadership theories that acknowledge this complexity and help leaders navigate in it. One such theory is *adaptive leadership*, which has at its core distinguishing between technical problems (clearly defined problems with clear solutions) and adaptive challenges (the identification of the problem and response require collective learning) (Heifetz, Grashow, & Linsky, 2009). Health care is considered rife with adaptive challenges, e.g. supporting a patient to make lifestyle changes for improved outcomes of a treatment or involving colleagues in a major downsizing initiative without compromising quality of care (Anderson et al., 2015; Bailey Jr et al., 2012; M.H. Storkholm, Mazzocato, Savage, & Savage, 2017; Thygeson, Morrissey, Ulstad, & Mph, 2010). In these situations, patients and colleagues need to re-evaluate their beliefs, set new priorities, and develop new habits, i.e. do adaptive work (Bailey Jr et al., 2012). The role of the leader in such situations is to: 1) frame adaptive challenges by gaining perspective, i.e. "getting off the dance floor and going to the balcony"; 2) let the organization feel and acknowledge pressure to address these; 3) challenge established roles (including one's own), but resist defining them too quickly; 4) expose conflict and let it emerge; and 5) challenge unproductive norms in order to keep work at the center of people's attention (Heifetz et al., 2009).

2.4 EVIDENCE ON LEADERSHIP DEVELOPMENT

The realized need for improving physicians' leadership and management capabilities has led to the expansion and/or development of programs not specific to medicine, such as MBA programs. While highly popular and potentially beneficial for one's career progression, the deconstruction and fragmentation of management and leadership competencies into separate topics (as listed in competency models) is one of the sources of critique for why these programs

do not deliver on their potential (Blumenthal et al., 2012; Fraser & Greenhalgh, 2001; Mintzberg, 2004). Participants try to analyze and innovate without seeing the inter-dependencies, i.e. the programs can instill a belief or overemphasize that management is about analysis (Mintzberg, 2004). In actuality, management and leadership encompass a broad spectrum of complementary and interdependent behaviors (Blumenthal et al., 2012).

Developing programs and courses specific for medicine has met limited success. Previous systematic reviews of leadership training programs for physicians found modest effects on self-reported progress in competencies, behaviors, and outcomes (Frich, Brewster, Cherlin, & Bradley, 2014; Straus, Soobiah, & Levinson, 2013). The programs did positively affect participants' advancement in academic rank and hospital leadership positions, as well as their success in publishing papers compared to non-participants, but had no effect on self-efficacy, efficiency, and actual skills development (Straus et al., 2013). Leadership development interventions can decrease physicians' self-confidence related to financial-management (Straus et al., 2013). A recent review concluded that leadership development programs can benefit staff beyond the program participants, improve patient safety and satisfaction, contribute to organizational improvement through projects, and improve participants' ability or confidence to apply their leadership skills (Seidman, Pascal, & McDonough, 2020).

Reasons for why leadership development has yet to reach its much hoped for potential are many. Most programs rely on conventional class-room teaching; focus on individual leader development; and reflect the ideological enthusiasms of the trainers and designers rather than theories with evidence (Frich et al., 2014; West et al., 2015). Theoretical models and traditional class-room teaching approaches may find it difficult to reflect the complex core of what leadership is – a collective, relational phenomenon that emerges through interpersonal relation-ships, social influence processes, and team dynamics. (Edmonstone, 2011; Lega, Prenestini, & Rosso, 2017). Leadership development programs outside of medicine that have been able to double the chances for positive outcomes (60% vs. 34%) had an experiential design, addressed actual change, and were embedded in participants' work context (Avolio, Reichard, Hannah, Walumbwa, & Chan, 2009; Day, 2001).

Similarly to effective programs outside of health care, the programs with most impact in health care: 1) reinforce and build a supportive culture; 2) ensure high-level sponsorship and involve-ment; 3) tailor the goals and approach of the program to the context; 4) target the program toward a specific audience; 5) integrate all features of the program (outcomes-based design); 6) use a variety of learning methods (e.g. interactive workshops, action learning); 7) offer extended learning periods with sustained support (e.g. coaching and mentoring); 8) encourage ownership of self-development; and 9) demonstrate commitment to continuous improvement of the program (Blumenthal et al., 2012; Geerts, Goodall, & Agius, 2020).

Beyond the outcomes themselves, the reviews of evaluation studies point to shortcomings with the dominant evaluation designs. Existing evaluation studies ignore the temporal aspects of competence development; measure a heterogenous set of outcomes or merely participants' satisfaction; and demonstrate a disconnect between the underpinning theories and ideas, what these promise, and which outcomes get measured (Avolio et al., 2009; Edmonstone, 2013; Frich et al., 2014; Shamir, 2011; Straus et al., 2013; West et al., 2015). Moreover, most evaluation designs operate with an assumption that the observational evidence (outcomes of a

program) are caused by the program without explaining the conditional causality, i.e. "how a particular program works through changing the reasoning and responses of participants to bring about a set of intended outcomes" (Dalkin, Greenhalgh, Jones, Cunningham, & Lhussier, 2015). When combined, all these considerations suggest that an effective approach to leadership and management development in health care warrant more research.

2.5 TRANSFORMING MEDICAL COMPETENCY INTO MEDICAL MANAGEMENT CAPABILITY

This thesis is anchored in the assumption that medicine and management are intertwined in an "unavoidable partnership" at the systemic, organizational and individual levels (Brommels, 2010). The involvement of economists, consultants, politicians, and managers in health care places a new responsibility on the medical professional who is forced "to accept that limited resources need to be allocated in a way that grants the best return" (Brommels, 2010). Envision a *medical manager* who is able to fully integrate medicine and management and who understands the need for "'micromanagement' of the clinical processes and 'macromanagement' of the organizational structures in which they are embedded" (Brommels, 2010). They are a reflective practitioner who experience their daily practice of medicine also as a daily practice of leadership. They do not shy away from, and in fact welcome, complex management challenges. They transfer their competencies developed through medical practice and apply them in new situations, and by doing so, gradually build up their medical management capability (Fraser & Greenhalgh, 2001).

This brief vignette alludes to a difference between competency and capability. While *competencies* are the application of knowledge, skills, and attitudes on known problems with proven solutions, *capabilities* involve learning how to use and adapt these competencies in uncertain environments to address unfamiliar challenges (Fraser & Greenhalgh, 2001) (Figure 2).

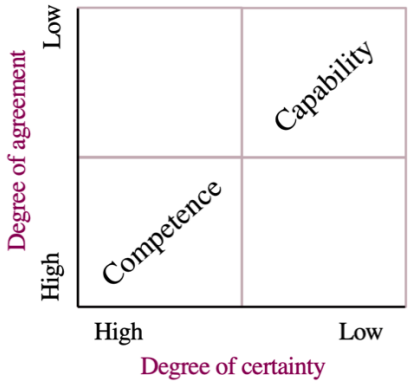

Figure 2. Competence vs. *capability.*
Adapted from (Fraser & Greenhalgh, 2001).

The ongoing Covid-19 pandemic is rich with examples where medical expertise has been applied in ways not anticipated in textbooks and how a new knowledgebase to help patients has been developed through feedback about performance as it took place, i.e. as a result of

reflective practice (Argyris & Schön, 1978; Greenhalgh, 2020; Greenhalgh, Knight, A'Court, Buxton, & Husain, 2020).

Similarly, when facing complex challenges as a medical manager who has to orchestrate medical practice in ways that provide high quality, equitable, and efficient care, one is not able to rely on the goals of certainty, predictability, and linear causality inherent to evidence-based medicine (Greenhalgh & Papoutsi, 2018). Instead, as a medical manager, one needs to develop the capability to embrace complexity with a learning orientation and have the courage to generate "uncomfortable knowledge, to negotiate good compromises, and to embrace creative, reflexive and collaborative ways of working and thinking" (Greenhalgh & Papoutsi, 2018).

To conclude, the state of evidence in medical leadership development suggests that the "quick fix" of sending physicians to management programs will likely not produce the desired results. The evidence points to an idea that as medical professionals spend decades in education to develop their medical competencies, they most likely also develop capabilities which at the very least, are partially pertinent to medical management. Through a transformational learning experience, these capabilities could be triggered through programs which engage physicians in addressing the complex challenges of health care, are pedagogically sound (evidence-informed), and resonate with the professional ethos of the physician role.

3 AIM

The aim of this thesis is two-fold:

- To deepen the understanding of how to better develop medical management capabilities of physicians
- To apply this understanding in the design and evaluation of a leadership development program anchored in medical practice.

To achieve this aim, the thesis will explore three research questions:

1. What qualities and capabilities have emerging and senior health care leaders developed and how have they done so? (Study I)
2. What are the conditions that facilitate or impede the influence of physician leadership on organizational performance? (Study II)
3. How can a leadership development program anchored in medical practice improve physicians' leadership capabilities? (Study III)

4 METHODOLOGY

This thesis has its foundations in the paradigms of social constructivism and critical realism. Social constructivism suggests that knowledge is constructed in interactions with others (Guba & Lincoln, 1994). Knowledge develops as we interact and try to understand and explain the reality around us. In the social constructivist paradigm, knowledge can thus be more or less informed as opposed to "true" in its absolute sense (Guba & Lincoln, 1994).

In this thesis project, I worked with leadership development professionals to seek to understand what the challenge in developing medical leaders really is about. I analyzed and interpreted the findings together with them in order to develop potential solutions anchored in the findings and previous research. I sought to develop an in-depth understanding of the field of medical leadership development through careful study of the literature, interactions with study participants, and engagement with the setting. The findings describe the knowledge that was developed along the way in a hope that it will enable more informed learning and knowledge creation in the future. If I had conducted my research *on* as opposed to *with* this organization and its people, the developed knowledge would most likely have been different.

As the thesis work progressed and my own understanding of the philosophy of science evolved, I came to realize a limitation of social constructivism, which is that it pays only *circumstantial* attention to context, i.e. context is the description of what happens to be going on in the background of, in this case, the program (Pawson & Tilley, 1997, p. 23). After having learned how contextually dependent leadership development and learning is, it became clear that the evaluation design needed to support the ability to describe the contextual features within and around the program in ways that help us understand what is it about the program that makes it work, i.e. the underlying mechanisms that influence participants' learning processes. Thus, I

viewed context not merely as circumstantial, but as a ”conditioning of causal mechanisms which turns (or fails to turn) causal potential into a causal outcome” (Pawson & Tilley, 1997, p. 69). As argued by Pawson and Tilley, this way of seeing the context brings us to the critical realism paradigm. This transition from social constructivism to critical realism can be observed in the individual study designs where Study I was embedded in social constructivism, and Studies II and III in critical realism.

In line with these epistemological and ontological underpinnings, the thesis project had an action research design with influences from Appreciative Inquiry.

4.1 ACTION RESEARCH DESIGN

As (management) researchers, the notion that *theory should inform practice,* is widely shared and accepted. If we use this as a point of departure, which theory should then inform medical leadership development? If we were to limit ourselves to a summary of the evidence base and the dominant research streams, we would probably conclude that medical leaders should practice transformational leadership, develop their competencies through offsite leadership programs, and evaluate the effectiveness of these programs using the Kirkpatrick model of program evaluation.

The paradigms of social constructivism and critical realism adopted in this thesis instead point to a different question – what if we were to *generate our theories through practice*? The central question then becomes, “How do we develop knowledge about medical leadership development in ways that are *valid*, but also *vital*, to organizations and individuals?”

This thesis is comprised of three individual studies. In Study I, we aimed to identify the qualities and capabilities effective physician leaders attribute to their success in leading change and how they developed these. In Study II, we sought to understand the relationship between management and medicine by systematically exploring the conditions that facilitate or impede the influence of medical leadership. In Study III, we built upon the findings of the first two studies, anchored medical leadership development in academic health care, and conducted a realist evaluation which elicited the mechanisms influencing participants’ learning processes.

An action research design was used as the overall research strategy in this thesis. It brings together action and reflection; theory and practice. I chose action research as it engages both researchers and collaborators/participants in a double-loop learning process, i.e. it challenges our own deeply held views and assumptions of how leadership and leadership development work in health care (Argyris & Schön, 1978).

Action research is a participatory process where knowledge is developed systematically in collaboration with key actors in order to collectively learn and provide practical solutions to pressing concerns of the individuals and communities involved (Reason & Bradbury, 2006). Its core underpinnings challenge the conventional approach to research that can create *ivory towers* of knowledge; instead it rests on the realization that research conducted without its relevant stakeholders is “incompetent” (Brydon-Miller, Greenwood, & Maguire, 2003). It seeks to contribute to organizational learning by integrating theory, method development, and practical know-how (Reason & Bradbury, 2006). In this project, it implies mutual learning

between the researchers, collaborators in the setting, and study participants by embedding the research in practice.

The action research process consists of a pre-step followed by four cyclical steps (Coghlan & Brannick, 2014). The pre-step is about understanding the context and purpose of the challenge the action research project is aiming to address. It includes both external and internal forces of change at work in the challenge at hand (Coghlan & Brannick, 2014). In this thesis, the external context referred to medical leadership and its development as a phenomenon and the state of research in this field (explored in Study I and II). The external context also includes the health care system in Sweden and the regional health system of Stockholm (a by-product of Study I). Study I and Study II contributed an in-depth understanding of the interplay between the logics of medicine and management and the implications for the development of effective physician leaders. I also familiarized myself with the organizational change processes at the hospital, beginning with the merger of the Karolinska Huddinge and Karolinska Solna hospitals into the Karolinska University Hospital through published research, their evolving role in the Stockholm region health system (through reports from the region), and the details of the major change process that were ongoing (with support from the parallel research projects related to Value-Based Health Care in our research group).

The most important work in the pre-phase was, however, establishing the relationships with key actors at the hospital (see more in 4.2.3). Based on three rounds of failed attempts to identify a genuinely interested and engaged partner, I was delighted to learn that the views on and practices of leadership development at the Karolinska University Hospital had, along with the rest of the hospital, undergone major reframing and restructuring.

Following the pre-phase, the four cyclical steps that then evolved into a spiral over time were (Coghlan & Brannick, 2014):

Step 1. Constructing. Identify the practical and theoretical foundations of the project. The theoretical foundations were laid by Study I and Study II. The practical foundations were established as a result of conversations with key informants, direct observations, and interviews conducted with prospective program participants to understand their challenges and identify developmental needs. This step resulted in descriptions of the program purpose and learning outcomes.

Step 2. Planning action. This step refers to program design. Based on the theoretical and practical foundations, the main components of the program were designed by the program team. This was done as an iterative process in collaboration with the leadership development unit at the study setting. Beyond the focus on the program content and teaching process, significant effort was made to describe the underlying mechanisms we believed were needed to trigger participants' learning. This step resulted in a program theory and Context-Intervention-Mechanism-Outcome (CIMO) configurations.

Step 3. Taking action. This step comprised the delivery of three iterations of the program studied in Study III.

Step 4. Evaluating action. This step involved the identification of intended and unintended outcomes by examining the fit between the learning outcomes, program content, and delivery.

This was done continually during the program so that lessons learned at each iteration informed the next iteration of the program. This step formed the core of Study III.

4.1.1 Appreciative Inquiry

While most action research is problem focused, the research strategy in this thesis has been influenced by Appreciative Inquiry (AI). AI is a form of action research that does not see organizations as "problems to be solved" but seeks to systematically identify and build upon the ideas, beliefs, values, structures, practices, and procedures in organizations and within people that have enabled them to thrive in the past (Troxel, 2002). It suggests that one can influence future developments by asking questions which enable those answering to better apprehend, anticipate, and heighten positive potential as they tap into existing resources, awaken curiosity, and commitment (Cooperrider, Whitney, & Stavros, 2003). While Study I had an explicit AI design, the influence of AI can be seen in the main assumptions held in this thesis:

- Managerial capabilities can be developed by *finding management in medicine* (as opposed to *adding* management to medicine), i.e. there are existing competencies in medical practice that can be used for effective medical leadership
- *Medical and managerial logics can be integrative* as opposed to conflicting
- Evaluation of complex interventions benefit from understanding *what worked for whom and why*

4.2 STUDY SETTING

The empirical data in this thesis has been collected from the contexts of the health system in Sweden (Study I) and the Karolinska University Hospital made possible through a collaborative partnership between the hospital and Karolinska Institutet (Study III).

4.2.1 The Swedish health system

Sweden has one of the world's leading health systems when measured by outcomes such as life-expectancy and quality of care (Anell, Glenngård, & Merkur, 2012). While general policy-making is done on the national level, the regions are responsible for funding and provision of health services with the exception of care for the elderly and disabled people carried out by the municipalities (Anell et al., 2012). This decentralized approach to health governance has enabled local innovation, which has placed Swedish health care at the forefront of developing and applying new models for care delivery (Chipman, 2019). Health care expenditure is mainly tax funded, which demonstrates a societal commitment to overall principles of human dignity, solidarity, and cost-effectiveness (Anell et al., 2012). Differences in health outcomes and access to care between regions and socioeconomic groups, often attributed to too much decentralization, however, have raised concerns about health inequities (Anell et al., 2012). This has resulted in policy priorities to reduce waiting times, improve care coordination, and privatize primary health care in the hope of creating a better fit between the supply and demand of services (Anell et al., 2012). To better address the needs of the aging population while at the same time ensuring financial sustainability of the health system, the past two decades have seen

major structural changes to move care out from tertiary hospitals and improve care integration. One of these changes was the construction of the New Karolinska Hospital and the introduction of its new operating model.

4.2.2 The Karolinska University Hospital

Central to this thesis has been a collaboration between the Clinical Management research group at the Medical Management Centre, Karolinska Institutet, and the leadership development unit at the Karolinska University Hospital.

Karolinska University Hospital is a publicly owned and funded hospital in Sweden which operates in the Stockholm Region primarily at two sites, Huddinge and Solna. At the time of the data collection (2018-2019), the hospital had 897 beds and a turnover of SEK 19 billion ($1.9 billion), 15 526 employees, and 1.35 million patient visits per year (*Karolinska Universitetssjukhuset: Årsrapport*, 2018). During this period, the hospital was undergoing several major change processes that were started in 2015. In conjunction with a political decision to change its focus to highly specialized tertiary care, a new hospital was built and a new operating model was developed and introduced. These two major change processes were happening simultaneously and placed new demands on staff and managers. Informed by Value-Based Health Care, a key aspect of the change process was to shift the operating model from specialty-based departments into a thematic organization. The themes were developed based on patient segments which required similar specialties and care processes (Karolinska Universitetssjukhus website). Several new managerial roles were introduced, including a new role for first-line physician managers called Patient Flow Managers (in Swedish: *patientflödeschefer,* PFCs) and who were the study participants in this action research project.

4.2.3 The research collaboration: a journey into a learning partnership

The word I would use to describe the development of the partnership with the Karolinska University Hospital is *synchronicity*. Just as I was beginning to get increasingly concerned about the prospect of finding a genuinely vested partner for exploring the questions this thesis posed about medical leadership, my then main supervisor received a call from Karolinska University Hospital. They were inquiring about the state of research on medical leadership and the potential for collaboration in supporting the hospital in their leadership development efforts.

As a PhD student, I had identified a practical challenge and a scientific knowledge gap in the field of medical leadership development, while, across the road, a hospital was in the midst of a major organizational change and needed support in developing their managers' capabilities. The hospital was in negotiations with several leadership development consultancies, but decided it wanted to take on a different approach and thus contacted the Medical Management Centre to explore possibilities for collaboration.

From the very first meeting, there was mutual curiosity and respect. At the onset, our main contact person, then head of leadership development, was not only an experienced HR professional and leadership development facilitator, but in many ways a leadership scholar himself. He, along with the head of the hospital, had chosen to approach leadership development not as another box to be ticked, but as a strategic investment integral to the

ongoing change efforts. Moreover, their views on leadership and knowledge of leadership theories resonated with what I had learned by then about medical leadership in complex contexts. Their mental models allowed them to acknowledge the inherent complexity in the ongoing change efforts at the hospital, the bearing this had for the needed leadership capabilities, and hold a sense of humility and trust in the process which manifested as a continual learning focus. These aspects enabled us to develop a resonant relationship and build trust between the researchers and practitioners. This also allowed us to move rather quickly from a question "could you deliver a leadership development program?" to a conversation about "given our complex context, how can we engage in a learning process about how to best develop our leaders?"

While we could move quickly, it also took us researchers almost two years of meetings from the initial contact to fruition of the program studied in this thesis to find good ways to collaborate and learn together, including how to understand and navigate the hierarchy, resources, and interests of the various actors within the hospital (L. Smith, Bratini, Chambers, Jensen, & Romero, 2010). At the beginning, we had regular meetings to understand each other's perspectives and interests. These soon grew into a more formal arrangement where I was present at all weekly team meetings for the leadership development unit, and in March 2020, I was employed part-time at the hospital to work with leadership development. This learning partnership has grown stronger, despite the fact that our initial contacts – the head of leadership development and the CEO of the hospital were, along with many other managers, replaced.

4.3 DATA COLLECTION AND ANALYSIS

The empirical basis of this thesis consists of data from qualitative data collection and analysis methods. Data was collected through semi-structured individual and focus group interviews, participatory and non-participatory observations, and a systematic literature search. Data was analyzed with inductive or directed content analysis and thematic synthesis.

Data was collected between October 2013 to January 2020 and is presented as three studies described in the Table 2.

Table 2. Overview of Study I, II & III.

STUDY	AIM	DESIGN	SETTING AND PARTICIPANTS	DATA COLLECTION	DATA ANALYSIS
I	Explore the qualities and capabilities effective physician leaders attribute to their success in leading change and how they developed these	Interview study informed by Appreciative Inquiry	Emerging and senior leaders who had demonstrated leadership by having led or contributed to positive change in health care in Sweden	Twenty semi-structured individual interviews	Inductive qualitative content analysis
II	Systematically explore conditions that can either facilitate or impede the influence of medical leadership on organizational performance	Systematic literature review	N/A	PubMed, Web of Science and PsycINFO were searched from 1 January 2006 to 21 January 2020 Seventy-three peer-reviewed, empirical, English language articles and literature reviews that focused on physicians in the leadership and management of healthcare were included	Thematic synthesis
III	Describe how medical leadership development was anchored in the challenges of the academic health care context and elicit the mechanisms underlying its participants' learning process, i.e. to unpack what worked for whom, how and in what circumstances	Realist evaluation	Twenty-eight PFCs participating in a leadership development program (three parallel groups) at a publicly funded university hospital in Sweden undergoing a major organizational change process	Seven direct observations (42.5 hours) and seven interviews with prospective program participants, program development documentation, thirty hours of direct observations, participants' summative evaluation forms, and two focus group interviews with 12 participants	Directed content analysis based on pre-developed Context-Intervention-Mechanism-Outcome configurations

4.3.1 Study I

Study I is a qualitative interview study informed by Appreciative Inquiry. Twenty semi-structured in-depth interviews were conducted with senior (n=10) and emerging (n=10) physician leaders who had a track-record of contributing to positive change in health care in Sweden.

The interview guide, informed by AI, consisted of three sets of questions (Appendix 1). The first set helped the interviewees to reflect on what drives them in their work, their successes,

and their personal attributes. The second set inquired about how interviewees' past experiences enabled them to develop the qualities and capabilities underpinning their success in leading a successful change. The third set was about the interviewees' ideas and suggestions for how to develop such capabilities in future physician leaders. The interview guide was pilot-tested three times with individuals with the same profile as interviewees. As the questions did not change after the first pilot, the two subsequent pilot interviews were included in the data analysis.

Interviews lasted between 60-80 minutes and were digitally recorded. With the exception of three interviews conducted over the phone, they took place at a convenient location for the interviewees, free from interruption.

Interviews were transcribed *verbatim*. Data was analyzed with inductive qualitative content analysis using NVivo qualitative data analysis software; QSR International, V.10, 2012. The first author coded meaning units relevant to the research question. During this process, the analyses for emerging and senior leaders were separated as the authors noticed different patterns in the codes. Thereafter, codes were categorized by the first and last author. Categories were reviewed to develop sub-categories and themes where applicable. The categorization process was repeated independently by two other groups of six researchers to strengthen the credibility of the findings and corroborated the original categorization when they were compared by the first author.

4.3.2 Study II

Study II is a systematic literature review where thematic synthesis was used to analyze empirical papers and literature reviews published between January 1, 2006 and January 21, 2020. It was guided by the ENhancing Transparency in REporting the synthesis of Qualitative research statement (ENTREQ). Boolean searches were performed in Medline/PubMed, Web of Science, and PsychINFO. Included articles were in English, peer-reviewed, empirical studies or literature reviews, that focused on physicians in the leadership and management of health care, i.e. their role in quality improvement, coordination of care, resource management, team leadership, change management, policy reform or descriptions of their individual experiences in such roles.

Identified titles and abstracts (n=2151) were screened by the first author, after which all authors contributed to screening the full texts (n=216). After coming to an agreement on which papers to include (n=73), a critical appraisal was conducted using a combination of the Standards for Reporting Qualitative Research (O'Brien, Harris, Beckman, Reed, & Cook, 2014), a 14-item checklist developed from Smith *et al* (2011) and Shea *et al.* (2007), and a Mixed Methods Appraisal Tool (Hong et al., 2018).

After collecting data on general characteristics such as study design, country of origin, setting, and study participants, data extraction and analysis followed an inductive approach. Results sections of included articles were carefully read to identify meaning units describing the conditions that influenced medical leadership and organizational performance. The first author summarized these into codes which were then developed into descriptive themes. Given that

the primary output of thematic synthesis is a higher-order theoretical structure, the descriptive themes were further analyzed and developed into analytical themes to depict conditions that facilitate or impede the impact of medical leadership. The latter was presented as a hypothetical model which illustrates two opposing schemata related to willing vs incidental leaders.

4.3.3 Study III

Study III is a realist evaluation (Figure 3) of a leadership development program that was specifically designed for PFCs at the Karolinska University Hospital. The steps of developing the program theory and the initial Context-Intervention-Mechanism-Outcome configurations (hypotheses) are described under the main findings in sections 5.3.2 and 5.3.4. This study focused on testing these hypotheses through observations and interviews and resulted in a revised program theory.

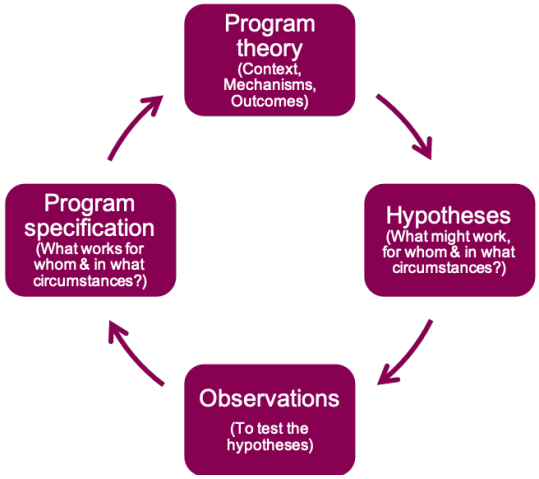

Figure 3. Description of the study design based on the realist evaluation cycle. Adapted from (Pawson & Tilley, 1997).

Data was collected from April 2018 through May 2019. Table 3 provides an overview of the data sources and analysis approaches. Data was collected *prospectively* (to inform the development and continual improvement of the program) and *retrospectively* (to assess how the program contributed to participants' learning) from direct program observations (30 hours), program team participatory observation notes, two post-program focus group interviews (n=12), and participants' summative evaluation forms. With the purpose to prove or disprove the CIMO configurations developed during the program design phase, the configurations were used as an analytical framework for directed content analysis.

Table 3. Overview of data sources, analysis and applications in Study III.

Data source	Type of data	Data analysis	Application
CIMO development			
Seven direct observations (42.5 hours) combined with seven interviews with prospective program participants by the first author	Qualitative	Inductive thematic analysis	Informed learning outcomes, CIMO configurations, and program design
Iterative CIMO testing			
Direct observations (30 hours) of each module by co-authors	Qualitative	Directed content analysis	Validation of the program outlines Validation of participants' comments during the modules
Participatory observation notes by the first author	Qualitative	Directed content analysis	Testing CIMO configurations
Two post-program focus group interviews with 12 participants conducted by co-authors	Qualitative	Directed content analysis	Learning outcomes Testing CIMO configurations
Participants' summative evaluation forms after each module	Quantitative and qualitative	Directed content analysis	Learning outcomes Testing CIMO configurations

In order to test the CIMO configurations, data from different sources was triangulated. Participatory observation notes, written primarily by the first author, were reconciled with co-authors' notes from direct observations conducted at the different program modules. Free text answers in evaluation forms were interpreted in conjunction with participants' accounts shared at the focus group interviews and those captured in observation notes.

4.4 ETHICAL CONSIDERATIONS

There are two dimensions of ethics to consider in action research – the philosophical and the practical (Eikeland, 2006). The philosophical aspect is tied to the realization that in research ethics the central question is typically, "How do we treat *them* (the research subjects)?" In action research, the relationship between researchers and research participants is transformed through a collaborative learning process where the question instead becomes, "How do we relate to and treat *each other*?" (Eikeland, 2006). This change in the question alludes to the risk of introducing a power gradient and exploiting participants.

The way we addressed the risks tied to a possible power gradient was by including participants with the same professional background and managerial role. As will be demonstrated in Study III, we worked intentionally to create psychological safety in the group. We sought to surface and challenge our own and participants' mental models about learning, leadership, research, and medicine. This approach was applied not only to the program participants, but to all the collaborative forums in this project – the program participants, leadership development unit, program team, and the supervisory team. All findings were reported and interpreted on a group level to preserve the anonymity and confidentiality of the participants.

In terms of decision-making, we were fortunate to have been fully trusted with the content and delivery of the program, i.e. all related decisions were up to the program team. It is also

important to emphasize that this research was not commissioned by the hospital. We explained the research process and got support and permission to conduct it.

Another important ethical consideration is the sustainability of the learning process established through the project (Eikeland, 2006). The research collaboration grew into an interdependent learning partnership by socializing and introducing me into the hospital. First, through the opportunity to attend the leadership development unit's weekly meetings. This allowed me to continuously understand what was going on at the hospital and to contribute with research findings to the development of the unit's strategy and other programs. Once data collection and analysis concluded, I was hired at the unit, creating the possibility for a sustainable learning partnership even after this specific research project had been concluded.

In order to create transparency and ensure participants' right to withdraw from the project at any time, the leadership development program was introduced as a research and development collaboration from the very beginning. It was explained that participation in the leadership development program was voluntary. The details of the research component were elaborated on at the onset of the program and prior to each data collection occasion.

In terms of the specific methods for data collection such as interviews and observations, written or oral informed consent was obtained from all participants. Consent forms described the goal of the project, logistics of data collection, how data was to be handled, how findings would be used and communicated. Participants were informed of their right to withdraw at any time.

In the preparatory phase of the project, I conducted observations which sometimes included patient-physician consultations. In such situations, the patient was asked by the doctor who I was shadowing if I may observe the consultation and explained what I was observing and how that data would be used. It was made clear that my sole focus was on the doctor's way of working and I was not collecting any data on the patient.

This project was vetted by the Stockholm Region Ethical Review Board (2015/197-31/5).

5 MAIN FINDINGS

The main findings consist of four sections (illustrated as the scientific inquiry process in Figure 4). In accordance with the action research process, the main findings of Studies I (5.1) and II (5.2) will be elaborated on to describe the theoretical and practical foundations for the program development. Despite not being a separate study, I will then continue with a description of the program development and delivery processes as these are important outcomes of the thesis project (5.3). The section will conclude with the findings of the realist evaluation, the last step in the action research cycle, as reported in Study III (5.4).

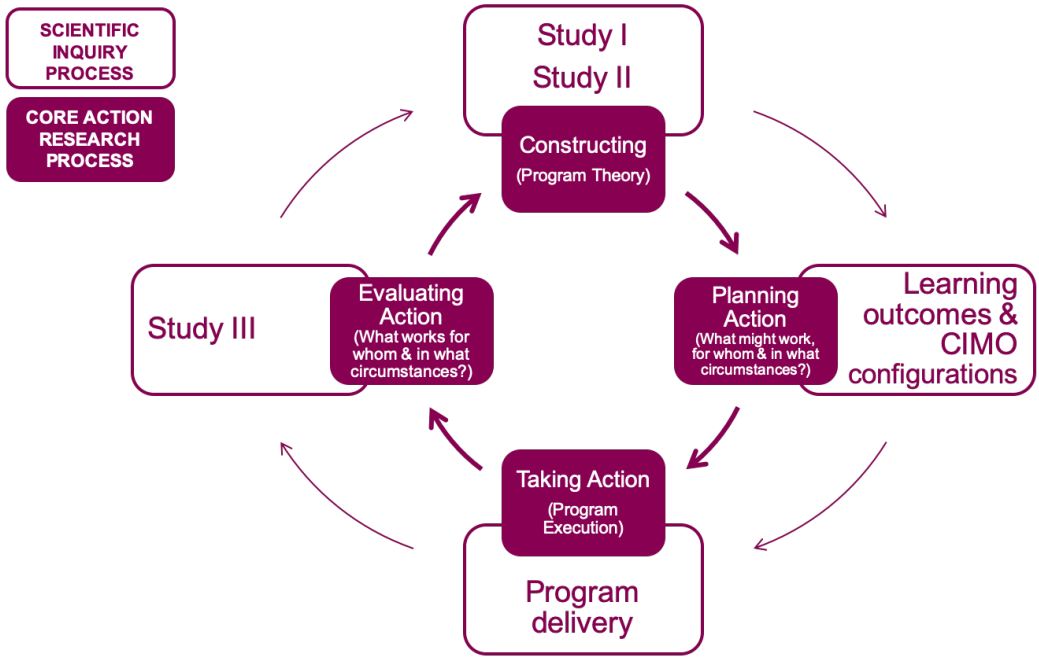

Figure 4. The relationship between the core action research process and the structure of the main findings. Informed by (Coghlan & Brannick, 2014; Pawson & Tilley, 1997).

5.1 STUDY I – EFFECTIVE PHYSICIAN LEADERS: AN APPRECIATIVE INQUIRY INTO THEIR QUALITIES, CAPABILITIES AND LEARNING APPROACHES

The aim of Study I was to explore the qualities and capabilities effective physician leaders attribute to their success in leading change and how they developed these.

5.1.1 Qualities and capabilities of effective medical leaders

Four qualities and four capabilities, with slight differences between senior and emerging leaders, were identified (Table 4).

Table 4. Qualities and capabilities of senior and emerging leaders. Adapted from Savage et al. (2018).

	Senior leaders	**Emerging leaders**
QUALITIES		
I. Clarity of purpose: improve care	Trigger to take a leadership role arises from a perceived dissonance between the purpose of health care and the status quo	Trigger to take a leadership role arises from their ambition to implement new ideas to improve care
II. Endurance	Follow-up, keep people accountable, remind them about goals and purpose, take initiative even in tough situations, remain true to one's own principles and ethics	Stand tall, persist despite resistance, maintain drive and ambition
III. Positive outlook	Look forward, see possibilities, demonstrate enthusiasm and energy	Focus on opportunities instead of problems, receive positive reinforcement and feedback, demonstrate enthusiasm and energy
IV. Authenticity	Humility, openness, listen, be trustworthy, passion	Humility, openness, ambitious, curious, professional, demonstrate commitment
CAPABILITIES		
I. Ground management in medicine	Combine in-depth medical knowledge with organizational development, economics and quality improvement to understand the medical consequences of management decisions	Continually expand knowledge in medicine and management
II. Engage others	"Work with the system"	"Work the system"
Relate to stakeholders in the system	Mediate conflicting interests by focusing on shared purpose	Negotiate to build support among decision makers
Bring together the right people	Find strategic allies	Compensate for own limitations through other's competencies
Engage staff in change initiatives	Be present and engage staff in order to identify problems, their root cause, and develop solutions	Ask questions and facilitate discussions to test hypotheses

Listen to engage	Listen first; Tell stories, inspire, walk the floors to keep people focused on goals	Listen in order to tailor communication approach
Develop resonant relationships	Seek to understand what matters to people – empathize, motivate and inspire	Be curious and interested in others, develop good social skills
III. Catalyze systems by acting on interdependencies		
Recognize patterns	Connect ideas, help others to see the big picture	See interdependencies in order to develop a strategic mindset to spot opportunities, set goals, develop action plans, provide structure and grow networks
Lead by example by using oneself as a learning tool	Improve self-awareness by using oneself as a learning tool; test changes on oneself	"Walk-the-talk" as a strategy to convince others
IV. Employ a scientific approach to understand problems and measure progress	Be curious, ask questions and collect and analyze data to understand problems before jumping into solutions; measure progress	Maintain a healthy skepticism and think critically; systematically collect and use data to analyze problems and measure progress

The qualities were I) clarity of purpose to improve health care; II) endurance; III) positive outlook; and IV) authenticity.

The senior leaders' purpose to improve health care was driven by their dissatisfaction with the status quo (I). They were committed to finding a better way to do things and endured and surmounted obstacles by holding people accountable and helping them to see the larger purpose (II).

The emerging leaders' purpose to improve health care was driven by their ambition to implement new ideas (I). Being junior in their profession meant that their proactive behavior was often met with resistance and in order to endure, they kept "standing tall". They described the importance of positive reinforcement and feedback in order to keep going (II).

Both groups demonstrated an overall positive outlook (III). When they met failure, they focused on learning and opportunities, and were forward looking. In addition, they displayed a sense of humility, openness, trustworthiness, professionalism and curiosity – qualities that we chose to describe as authenticity (IV).

The four capabilities were to I) ground management in medicine; II) engage others; III) catalyze systems by acting on interdependencies; and IV) employ a scientific approach to understand problems and measure progress (Table 4).

Participants were able to integrate their medical knowledge with that of economics, quality improvement and organizational development (I). That meant that every managerial decision was weighed with the lens of potential medical consequences. Such clear anchoring granted them credibility among staff.

In terms of the other three capabilities, the senior and emerging leaders had slight differences. When engaging others (II), the senior leaders "worked with the system", i.e. they helped stakeholders, even those with different interests, focus on a shared purpose and create strategic allies. They did this by being present and visible in the organization, and creating space for others to take the lead in problem identification and solution development. They listened first, empathized with what matters to people, and shared their decision-making powers. Senior leaders recognized patterns and connected ideas (III). Moreover, they saw their own role in the challenges facing them and reflected on the importance of self-awareness, which they improved by testing their ideas on themselves first. Senior leaders employed a scientific approach to understand problems and measure progress by asking questions, listening carefully and always being curious, i.e. they avoided jumping into solutions without first understanding the challenge at hand (IV).

When engaging others, the emerging leaders "worked the system" (II). Given their lack of formal authority, they found themselves needing to negotiate terms and team up with people who could compensate for their own shortcomings. Emerging leaders had their own hypotheses about the situations they encountered. Their way of engaging others was to ask questions and use the answers to tailor their communication. They too were good at recognizing patterns and they acted on interdependencies by creating structure and setting goals (III). "Walking the talk" was important for emerging leaders, more to illustrate the validity of their ideas and by that gain support, rather than for gaining insights about themselves as was the case for senior leaders. In terms of the scientific approach, emerging leaders talked about maintaining a healthy skepticism and making sure to have data that could inform decisions (IV).

5.1.2 Learning approaches of effective medical leaders

When reflecting back on their leadership journeys, participants described five influential learning approaches: I) cross-pollination from a diversity of work experiences; II) reflection; III) when education was integrated with practice; IV) being part of an environment that nurtured ambition and learning; and V) 'luck of the draw' (Table 5).

Table 5. Effective learning approaches used by senior and emerging leaders. Adapted from Savage et al. (2018).

	Senior leaders	**Emerging leaders**
I. Cross-pollination from a diversity of work experiences		
Learning by doing	Learn from experiences	Take responsibility for increasingly larger projects
Learn from medical practice	Communication skills, experience from different levels of the organization allowed them to adapt argumentation approach and manage expectations	Fast decision-making, emotional intelligence, open- mindedness developed through the experience of clinical rotations
Leave your medical comfort zone	Formulate questions, client focus, adaptability, relationship building, adapt management ideas into medicine	Challenge one's professional status, apply similar strategies across projects, problem solving, structure, work with data, presentation skills

Be a teacher and/or mentor	Teaching and mentoring was an integral part of senior roles and seen as acts of leadership to help others develop new behaviors	Facilitating learning for others was experienced as a trigger to learn, particularly about group dynamics
II. Reflection		
Feedback and evaluation	Coaching and mentoring by more senior people	Make systematic approaches to feedback and evaluation as well as senior colleagues a part of daily work
Observation	Negative examples of leadership	Collected observations of people and groups
Use theory to reflect on practice	Theory helps make sense of and frame one's experiences	Situations where theory was experienced as applicable to practice contributed to enthusiasm about work
III. Education integrated with practice	MBA programs that gave space to work on one's own cases. A systems science course improved understanding of quality improvement and ability to see interdependencies	Formal education was a tool to establish credibility, become professional and develop networks, communication skills and personal leadership. It triggered further interest in management
IV. Organizational environment that nurtures ambition and learning	Both groups attributed learning to their organizational contexts, particularly being surrounded by people who had faith in their capabilities, were interested in their input, supportive and encouraged openness, courage, ambition, commitment, creativity and honesty	
V. Luck of the draw		
Nature	Born this way/genetics: openness, honesty, commitment, competence, clarity, passion, persistence	Born this way/genetics: humility, openness, ambition, curious, enthusiastic, positive, ability to learn
Nurture	Upbringing encouraged openness, honesty, commitment, competence, clarity, passion, persistence	During upbringing learnt to take responsibility, observe, prioritize academic achievement, connect with people

Study participants did not attribute their qualities and capabilities to following a linear career path and attending suggested programs or courses along the way. What helped them to learn and succeed was to take responsibility for increasingly larger projects over time and drawing on competencies developed during the course of their medical education and practice (e.g. emotional intelligence, communication skills, and fast decision-making) combined with learnings gained from taking on roles outside of their "medical comfort zone" such as being a consultant, teacher, and mentor (I). Participants were able to grow due to their continual reflective practice which was enabled by feedback and evaluation, observing other leaders and peers, and using theories to understand practice (II).

Formal education was described as a tool for establishing credibility and was seen as helpful in the rare occasions where it gave space to work on one's own challenges, i.e. when it was integrated with practice (III). Participants attributed their learning to their organizational contexts and described the importance and value of having people around that have faith in one's capabilities and are supportive and interested (IV).

When it came to the qualities, participants either saw them as innate, i.e. being born this way, or as being developed during one's upbringing (V).

5.2 STUDY II – MEDICAL LEADERSHIP: BOON OR BARRIER TO ORGANIZATIONAL PERFORMANCE? A THEMATIC SYNTHESIS OF THE LITERATURE

The aim of Study II was to systematically explore conditions that can either facilitate or impede the influence of medical leadership on organizational performance.

5.2.1 Results of the study selection

The search in PubMed, Web of Science, and PsychINFO yielded 2176 records. Removing duplicates and adding records from reference lists resulted in 2151 records. Screening titles and keywords yielded 447 records after which the abstracts were screened, which left 216 articles for full text screening. In total, 73 articles were included in the thematic synthesis (Figure 5). The inclusion criteria are described in section 4.3.2. Detailed overview of the included articles is provided in Appendix 2.

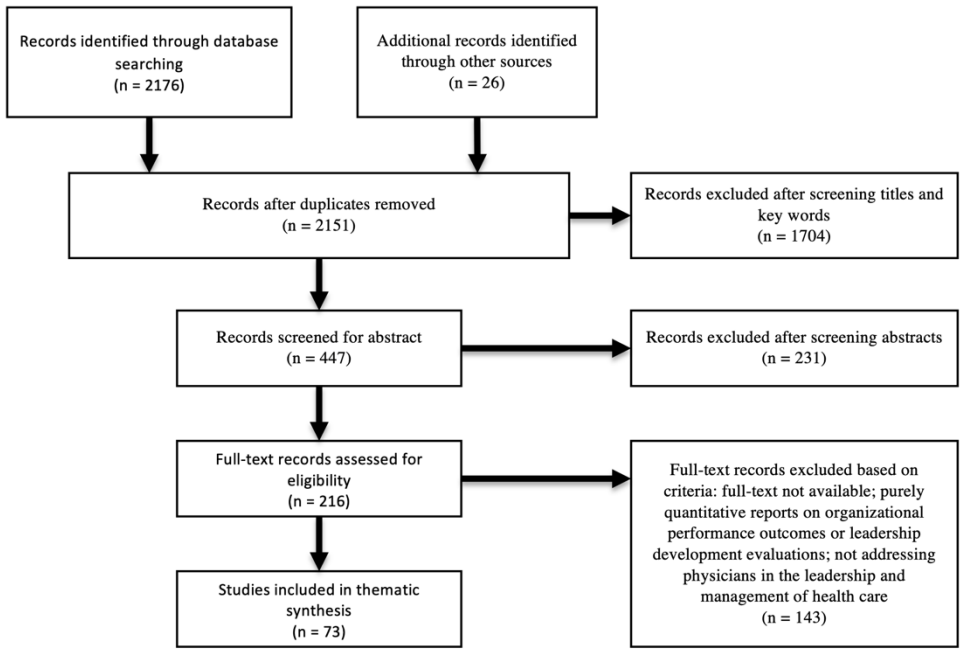

Figure 5. Study selection flow chart.

5.2.2 General characteristics

Most studies were conducted either in the UK (n=17) or the USA (n=16), took place in hospital settings (n=45), and focused on senior managers (n=19). Included articles reported on a variety of study designs out of which qualitative studies using interviews, observations, and/or document analysis (n=29), surveys (n=13), case studies (n=11), and literature reviews (n=10) were the most common.

5.2.3 Conditions that either facilitate or impede the influence of medical leadership on organizational performance

The thematic synthesis resulted in three descriptive themes. The themes described a movement from (Table 6):

1. Medical protectionism to management through medicine
2. Command and control to participatory leadership practices
3. Organizational practices that form incidental versus willing leaders.

Table 6. Descriptive themes, categories and sub-categories identified through the thematic synthesis. From (Savage et al., 2020).

	IMPEDING CONDITIONS	FACILITATING CONDITIONS
THEME 1	**From medical protectionism to management through medicine**	
CATEGORY / SUB-CATEGORY	*Medical protectionism*	*Management through medicine*
MOTIVATION TO LEAD	Safeguard physicians' role, identity & influence	Ensure that management decisions have a positive impact on care and clinical outcomes
PERCEPTION OF MANAGEMENT	Going over to the "dark side", concerns about losing credibility among clinical peers	A collective decision-making process where expert knowledge is integrated through openness, trust, respect, and cooperation
VIEW OF ONESELF AS A MANAGER	Heroes "working against the odds" or righteous victims "struggling in the face of adversity"	Knowledge brokers who see the opportunity for management to enhance clinical identities
ROLE OF MANAGERIAL STRATEGIES	To protect autonomy and avoid control, i.e. modernized professionalism	Productivity as individualized professional duty that builds on physicians' inner drive to improve care, i.e. new professionalism
OUTCOME OF MANAGERIAL STRATEGIES	Disengagement from difficult interactions with colleagues and patients	Engagement across professions that mediates status differences and facilitates knowledge-sharing
THEME 2	**From "command and control" to participatory leadership practices**	
CATEGORY / SUB-CATEGORY	*Command and control*	*Participatory leadership practices*
ORGANISATIONAL ATTRIBUTES	Bureaucratic, policy-driven and hierarchical; poor communication, lack of support, incompetence	Inclusive, solicit input, participatory decision making, shared vision
PERFORMANCE MEASUREMENT	Externally imposed performance measures with no authority, staff, budget, time, etc.	Co-designed performance measures to align quality and safety agendas
OUTCOME	Lack of ownership and trust, values conflict, sense of powerlessness, focus on compliance	Autonomy, meaning, local improvement, better management-clinician relationships, managerial job engagement and self-efficacy
THEME 3	**Organizational practices that form incidental *vs.* willing leaders**	
CATEGORY / SUB-CATEGORY	*Practices that form incidental leaders*	*Practices that form willing leaders*
RECRUITMENT	Informal networks, *ad hoc* processes, persuasion, lack of explicit selection criteria or expectations	Formalized, with explicit expectations to match strategic context, early identification of leadership potential, considers demographics and self-efficacy
TOP MANAGEMENT SUPPORT	Remind of responsibilities by nagging and arguing, crowd agendas with operational matters	Acknowledge and engage medical expertise and academic competence, foster collaborative relationships, effective communication and proactive decision-making, remove barriers such as lack of reward and recognition
STRATEGIC LEADERSHIP DEVELOPMENT	Expected to learn management on their own and on-the-fly. Leader development focused on individuals, divorced from everyday challenges and rarely followed up with opportunities for practice	Starts early, occurs on all levels, benefits patient care and system level challenges not just individuals, and is integral to strategic development

The movement from medical protectionism to management through medicine was portrayed in the ways managers described their motivation to lead, their perceptions of management, the view of themselves as managers, and the role and outcomes of managerial strategies.

The movement from command and control to participatory leadership practices was illustrated by differences in organizational attributes, performance measurement strategies, and their outcomes.

Organizational practices that form incidental versus willing leaders was described in terms of approaches to recruitment of medical leaders, top management support, and strategic leadership development.

5.2.4 The virtuous and vicious cycles of medical leadership

Integral to thematic synthesis, descriptive themes were used to generate a hypothetical model that illustrates a virtuous cycle of management through medicine and a vicious cycle of medical protectionism (Figure 6).

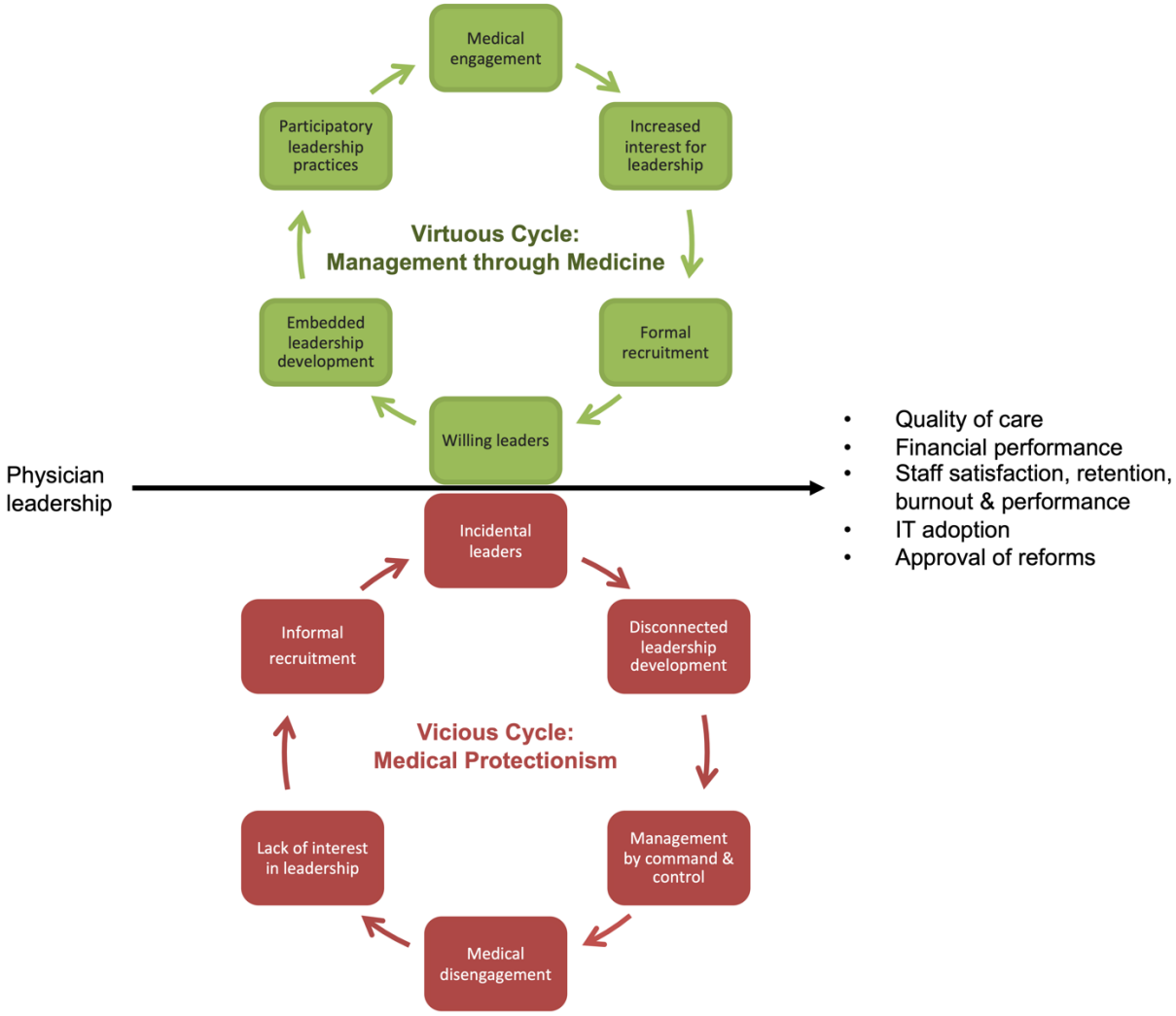

Figure 6. The virtuous and vicious cycles of medical leadership.
From (Savage et al., 2020).

The virtuous cycle illustrates that willing medical leaders who are dedicated to their own learning and who are nurtured through leadership development efforts embedded in quality improvement are likely to foster participatory leadership practices. These practices cultivate medical engagement and increased interest in medical leadership, which leads to an expansion of the recruitment pool, allowing for formal recruitment and new, better qualified, and motivated medical leaders.

The vicious cycle illustrates that incidental leaders tend to show less interest in developing their own leadership capabilities, which is amplified by leadership development efforts that are disconnected from the contextual challenges and needs. Relying mostly on historical experiences and observed leadership practices, these leaders tend to mimic management through "command and control", leading to disengagement and perpetuating the risk for forming incidental leaders.

5.3 LEADING IN COMPLEXITY: A LEADERSHIP DEVELOPMENT PROGRAM FOR PATIENT FLOW MANAGERS

Studies I and II provided the theoretical and practical foundation for designing and delivering the leadership development program that is the backbone of this thesis project. Box 1 below summarizes main implications from these studies. These implications were applied in practice as much as the circumstances allowed.

Box 1. Implications for the theoretical and practical foundations of the program

Building on the findings of Study I and II, the program will need to:

1. Support a growth mindset through establishing psychological safety and learning orientation amongst the participants
2. Help participants to develop a clarity of purpose
3. Develop participants' ability to engage others
4. Help participants to work on actual challenges in changing team constellations
5. Develop participants' systems perspective through observations, identification of interdependencies and analysis of situations through the lens of different parties
6. Provide training in how to engage others in multi-stakeholder change processes
7. Encourage the development of a scientific mindset in organizational improvement efforts by requiring that projects be anchored in evidence and use data to inform decisions and learning
8. Be embedded in quality improvement and by that create forms of deliberate practice of leadership capabilities while addressing specific challenges of the organization
9. Provide mentoring, coaching and networks
10. Create opportunities for inter-professional training

The following sections describe the program and its development process in terms of its target group (5.3.1), the program theory (5.3.2), the learning outcomes (5.3.3), the Context-Intervention-Mechanism-Outcome configurations (5.3.4), overall program description (5.3.5), the program participants (5.3.6), and the results of the summative evaluation (5.3.7).

Before going into the details of the program and its development, it is important to introduce the program team. The program team consisted of Pamela Mazzocato, Carl Savage, Mats Brommels, and myself. The rationale for this team constellation was tied to our extensive joint research and teaching experience in the field of medical management and leadership. Prior to this program (and to this day) we had been teaching the courses in health care management in the international master program in health economics, policy and management at the Karolinska Institutet. In particular, Mats Brommels and Carl Savage brought extensive teaching experience for various audiences of medical doctors.

5.3.1 Program target group

The program was specifically designed for Patient Flow Managers (PFCs). PFCs were physicians, often with doctorate degrees and some years of managerial experience as heads of clinical units. The PFC role was about managing, developing, and evaluating work within the patient flows and were thus central to the new operating model of the hospital. As a new managerial role, all positions were announced and filled via formal recruitment, i.e. the change was not carried out as a mere change in titles (though some might have experienced it as such). As it was central to the implementation of the new operating model of the hospital, which was highly debated both in media and internally, applying for this role often meant taking a stand, giving a chance to this new way of working, and risking being criticized by colleagues. The areas of reasonability for PFCs included:

- Care production, quality and cost
- Research production, quality and cost
- Education
- Resource management (budgetary responsibility)
- Medical staffing of the flow, including agreements with other patient flows to get access to the necessary clinical competencies not available within the flow.

The PFCs were responsible for leading the main forum for managing and improving the care processes in a patient flow, the Patient Flow Leadership Group (PFLG) meetings. These represented all health professions that had a significant role in achieving and improving health outcomes for the patients included in the flow (e.g. physicians from various specialties, nurses, physiotherapists, a patient representative, researchers, and a controller).

The focus on overall managerial capabilities, as opposed to clinical specialization, during the recruitment process, and the expectations tied to how work in patient flows was meant to be managed, challenged the traditional hierarchies within specialties. For example, a group of surgeons could be led by an oncologist. Such fundamental changes in professional dynamics presented PFCs with a myriad of personal leadership and organizational challenges.

5.3.2 Program theory

A program theory describes and links the context (C) of the program, the type of intervention (I), the mechanisms (M) that needed to be triggered and the overall outcomes (O). In the case of *Leading in Complexity*, it was based on the findings from Studies I and II, and the program team's contextual understanding:

In the context of a university hospital that is undergoing a major organizational transformation, a leadership development program will be delivered, which is specifically tailored to the organization; explicitly linked to the participants' challenges; anchored in medicine; and informed by research and evidence in order to enhance participants' learning orientation and assimilate new ways of leading operations and improvement.

Given this program theory, the program team needed to develop an in-depth understanding of the challenges, work context, and developmental needs of the prospective participants. To that end, I familiarized myself with key documents including internal strategic reports and communication, scientific publications about the setting, and extensive ongoing and historic media coverage describing the ongoing change process at the hospital, organized and attended meetings with key informants, and conducted direct observations and interviews with seven prospective program participants. These data formed the basis for the development of learning outcomes and specific Context-Intervention-Mechanism-Outcome configurations, which created the foundation for the program's design.

5.3.3 Learning outcomes

Based on implications from Studies I and II (see Box 1), and the program team's understanding of the contextual characteristics and the participants' challenges, four learning outcomes were formulated:

- Manage through clarity of purpose
- Identify, analyze, and address challenges by understanding how activities, resources, and partners can be coordinated, including exploring the evolving role of patients
- Work with others to develop a collaborative organization by learning and responding to complex challenges while maintaining focus and finding the energy to endure
- Develop one's own and the organization's ability to continually learn and renew.

5.3.4 Context-Intervention-Mechanism-Outcome configurations

Once the program theory and learning outcomes were agreed upon, and contextual data analyzed, we as a program team asked ourselves "Given this *context* and the learning *outcomes* we want to achieve, what *mechanisms* need to be triggered and how can it be done (*interventions*)?". This process enabled us to develop specific CIMO configurations, which informed the details of the program design and subsequent evaluation. The configurations are presented as hypotheses (Table 7).

Table 7. Hypothetical Context-Interventions-Mechanism-Outcome (CIMO) configurations.

Context	Interventions	Mechanism	Outcome
Hypothesis 1: Cultivating a growth mindset			
Physician managers, often with academic credentials, have deeply held (and often traditional) assumptions/beliefs/mental models about leadership	Learning and improvement-oriented facilitation; Trust and credibility built through research anchoring; Agreeing on and co-creating learning principles; Surfacing and challenging mental models and hidden assumptions about leadership and change; Check-in and check-out circles with reflections on the learning process; Using vignettes from participants' actual work; Reflective peer dialogue on personal growth and purpose	Cultivating a growth mindset	Curiosity; Openness; Focus on learning; Become more vulnerable
Hypothesis 2: Linking personal and organizational development			
Participants are finding their way into a newly created and multifaceted managerial role with a diffuse purpose and overseeing complex operations	Enabling participants to gain clarity of purpose with their leadership; Working on a personal development goal that is integral to addressing an organizational challenge; Simulation and debriefing of an actual work situation; Assessment and feedback on self-reported work-related attitudes in terms of burnout and engagement; Presenting research on the links between individual well-being and hospital performance	Linking personal and organizational development	A sense of meaning, focus, and improved performance; Improved self-awareness
Hypothesis 3: Grounding management in medicine			
Physician managers experience an erosion of their professional ethos as they progress in their careers; an image of "having gone over to the dark side", and a challenge to achieve seemingly conflicting goals	Enabling participants to gain clarity of purpose with their leadership; Using health care rather than management terminology in the analysis of one's organization; Introducing and applying findings from health care management research; Co-creation of an oath for medical managers	Anchor managerial strategies and practice in the understanding of their medical consequences	Managing through clarity of purpose; Understanding of how activities, resources, and partners can be coordinated
Hypothesis 4: Fostering an ability to surface and challenge mental models			

Physician managers face complex challenges which cannot be effectively addressed from the source of their deeply held assumptions/beliefs/mental models about leadership	Presenting and applying management theories anchored in complexity science; Surfacing and challenging mental models and hidden assumptions about leadership and change; Analyzing a real case from a similar context and with similar challenges but with an unconventional managerial strategy; Questioning work-as-imagined by comparing it to how work-is-(actually)-done	Fostering an ability to surface and challenge mental models	Awareness of and change in habitual views and behaviors; Ability to identify, analyze, and address complex challenges; Ability to work with others
Hypothesis 5: Cultivating a scientific mindset in medical management			
Despite working in a university hospital and having academic credentials, the participants are often unaware of health care services research	Using content, examples, metaphors, and teaching methods that are explicitly derived from health care management research, not least from the setting where participants practice; Health care management researchers as facilitators; Demonstrating how the program itself is part of a research process; Engaging participants in the analysis of their challenges by using evidence-informed frameworks	Cultivating a scientific mindset in medical management	Improved decision-making quality; Greater resonance and credibility with colleagues; Ability to identify, analyze, and address complex challenges
Hypothesis 6: Nurturing psychological safety			
Participants represent different parts of the hospital, are likely not to know each other, face potentially sensitive challenges, feel alone with their managerial challenges, and work in changing group constellations	Reflective check-in and check-out circles; Scheduled opportunities for informal conversations; Up to twelve participants per group with the same role and from the same hospital; Interactive facilitation with ample time and opportunity to share views and experiences; Starting the program with a two-day off-site retreat; Agreeing on and co-creating learning principles and goals; Guided peer-to-peer coaching processes; Explicit analysis of psychological safety in a meeting simulation	Nurturing psychological safety	Open climate for learning; Sense of community with other participants; Ability to work with others to develop a collaborative, learning oriented organization
Hypothesis 7: Anchoring the program in participants' everyday challenges			
Participants have varying degrees of managerial experience, different work contexts, and thus different types of challenges	Learning outcomes that are explicitly linked to their challenges; Preparatory assignments to reflect on and describe one's challenges; Planning actionable steps at the end of each module; Designing experiments for the period in-between modules;	Anchoring the program in participants' everyday challenges	Improved transfer of learning into practice

	Guided peer-to-peer coaching to diagnose one's own adaptive challenges; Using vignettes from participants' actual work; Using health care terminology in the analysis of one's organization; Simulation and debriefing of a management meeting; Analysis of one's work-life and habits to be able to develop increased personal resilience		
Hypothesis 8: Establishing routines for learning			
Physician managers are in a non-stop problem-solving mode, may find it difficult to create space for reflection, and are detached from the learning environment outside of the program	Creating a rhythm for learning in the forms of check-in and check-out exercises, and a mix of individual reflection, work in pairs and small groups; Using a virtual learning management system; Designing experiments for the period in-between modules; Presenting a summary of previous module(s) at the start of each module; Synthesis of all content at the last module	Establishing routines for learning	Improved knowledge retention
Hypothesis 9: Supporting presence			
Physician managers are frequently in a fire-fighting mode, i.e. there are many things competing for their attention making it difficult for them to be present in an intense learning experience	Reflective check-in and check-out circles; Sharing logistical issues to make everyone's attendance as focused as possible; Brief mindfulness practices	Supporting presence	Improved engagement in learning activities Improved personal resilience
Hypothesis 10: Creating meta-cognitive learning experiences			
In adult learning, the facilitators' observable behavior impacts participants' motivation to learn and their ability to apply their learning	Facilitators model the very behaviors and attitudes that they want the participants to develop, i.e. not only talk *about* research findings, methods, frameworks, but *apply* them as delivering the program. E.g.: a check-in that demonstrates a huddle meeting; application of mindfulness practices; following the principles of effective meetings (check-in, agenda, how we work today, next steps, check-out with formative assessment); creating psychological safety (not simply talking about it); cultivating a growth mindset (not simply talking about it); grounding management in medicine; and creating engagement and involving participants, not simply telling them to go engage and involve their staff	Creating meta-cognitive learning experiences	Amplify and reinforce the learning experience

5.3.5 Program description

Informed by the development of the CIMO configurations, *Leading in Complexity* was designed as an action learning program, where participants worked in small groups to address their actual challenges. The intention was to create a safe space, an "oasis", where participants could connect with each other around questions of how to improve everyday operations with the support of relevant theory and evidence from medical management research. The program spanned four months and consisted of four modules with five face-to-face full-day meetings: 1. Leading complex change; 2. Developing effective responses; 3. Execution as learning, and 4. Building resilience (Figure 7). As individuals' personal development impacts their leadership effectiveness and how organizational challenges are met, the program was designed to address both individual and organizational levels (Day & Sin, 2011; Heifetz et al., 2009; Kegan & Lahey, 2009). Each module had a primary focus as described in the diagnosis-action matrix (Figure 7) (Heifetz et al., 2009). Diagnosis refers to a reflective and analytical process to understand where participants were as individuals (their challenges, aspirations, abilities, etc.) and how their organizational context was faring (its challenges, opportunities, resources, etc.). Action refers to participants' response to what was identified in the diagnosis process, i.e. steps to improve, evolve, and develop as individuals and as an organization.

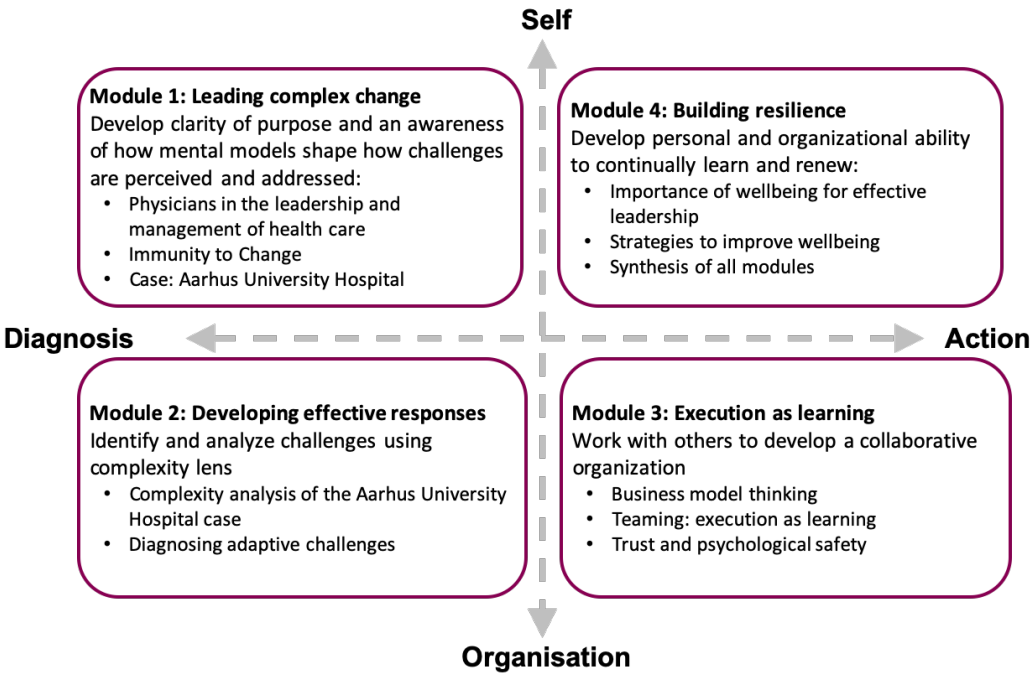

Figure 7. Program modules presented in terms of the diagnosis-action matrix. Adapted from (Heifetz et al., 2009).

The program content and pedagogy included theories, concepts, and research, such as medical management (Berwick, Nolan, & Whittington, 2008; Bodenheimer & Sinsky, 2014; Brommels, 2010; Fredriksson et al., 2015; Mazzocato et al., 2010; Savage et al., 2018; Marie Höjriis Storkholm, Mazzocato, & Savage, 2019; Marie Højriis Storkholm, Mazzocato, Savage, & Savage, 2017), reflective practice (Argyris & Schön, 1978), adaptive leadership (Heifetz et al., 2009), adult development (Kegan & Lahey, 2009), Complex Responsive Processes (Stacey, 2001), Complex Adaptive Systems (Plsek & Greenhalgh, 2001), Teaming (Edmondson, 2012; Nawaz et al., 2014), burnout and resilience (Boyatzis & McKee, 2005; Schaufeli, Leiter, &

Maslach, 2009), and growth and fixed mindsets (Ehrlinger et al., 2016). Each module concluded with participants developing actionable steps to help them develop their capacity to respond to their identified challenges. Given the program's dynamic context, content and pedagogy were continually revised and modified.

After each module, participants filled out an evaluation form informed by the Kirkpatrick model of program evaluation (Kirkpatrick & Kirkpatrick, 2005). During the focus group interviews at the end of the program, we inquired about participant's reflections and progress towards the learning outcomes.

5.3.6 Program participants

The program was run for three parallel groups, with 28 participants in total, out of which 17 (61%) completed the program by May 2019. Three participants cancelled their participation after the first module – two due to discontinuing their managerial roles and one due to a heavy workload. Five more participants completed the program by February 2020 and three dropped out.

Overall, participants were very satisfied with their experience in the program (Figure 8). On a 10-point scale, they rated that they would recommend this program to their colleagues with an average of 9.3. Participants felt engaged and supported in their learning, and appreciated the facilitators' pedagogical approach.

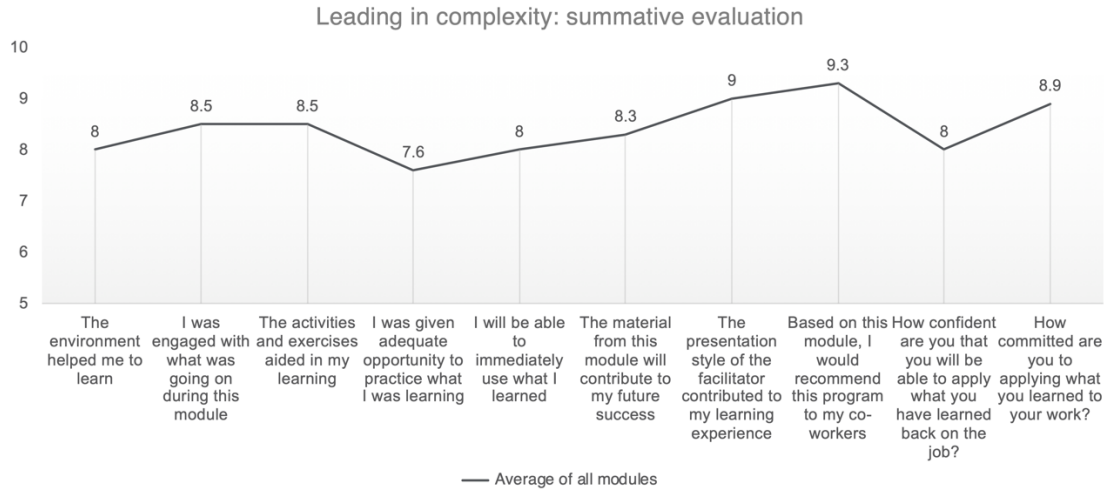

Figure 8. Results of the summative evaluation.

5.3.7 Progress in learning outcomes

Participants made progress in all the learning outcomes. The program helped them become clearer about what they really stand for as managers and were therefore better able to prioritize their efforts. They described an improved ability to unpack the complexity within their different types of challenges and match them with a response. The program challenged participants' habitual ways of working with others, including with difficult groups and people. They gained the courage to be more vulnerable so that others could open up and become engaged in problem solving and learning. Participants experienced the program as relevant and valuable to their

individual learning and the organization; a ”savior” that helped them understand their role and organization better and avoid leadership mistakes. Some reported they had applied theories and frameworks from the program, others were planning to do so. Some participants felt that they had primarily changed their attitudes to their role, their challenges, and their staff.

In terms of improvement, it was mentioned that the program description creates an expectation to learn about how to better integrate research and clinical work, but participants felt this was not addressed in the program. Some described their learning as more of a strategic nature, which lacked operational “how to’s”. The evolving role of patients in their work was a learning outcome, but not explicitly addressed in the program.

While the formative evaluation of each module enabled continual revisions of the program and summative evaluation at the end of the program described the perceived value to participants’ learning, the focus of the realist evaluation (Study III) was on exploring the underlying mechanisms in participants’ learning processes.

5.4 STUDY III – UNCOVERING THE LEARNING PROCESS IN MEDICAL LEADERSHIP DEVELOPMENT: A REALIST EVALUATION

The aim of Study III was to describe how a medical leadership development program was anchored in the challenges of the academic health care context and to elicit the mechanisms underlying participants’ learning processes, i.e. to unpack what worked for whom, how and in what circumstances. Ten CIMO configurations (Table 7) were explored as hypotheses using prospectively and retrospectively collected qualitative data. For illustrative quotations consult Study III manuscript.

5.4.1 Cultivating a growth mindset

Participants’ growth mindset manifested itself in their engagement with the learning process, both as a group and as individuals. They were curious and open and trusted themselves with the program team. Participants’ commitment to learning could be seen in their wish to have follow-up meetings and to continue practicing with each other and the program team.

While support was found for the hypothesis (CIMO configuration) in its entirety, the importance that participants attributed to the program team’s credibility was surprising. The need for trust permeated participants’ continual comments about their appreciation of and respect for the program team’s backgrounds in health care management research conducted at a medical university. They were inspired by their learning orientation and openness to critically discuss any aspect of the program and its content, often contrasting the program with other programs run by consultants and psychologists who wanted to convince participants of their own preconceived ideas. Another aspect that generated trust towards the program team was their in-depth knowledge of the setting.

5.4.2 Linking personal and organizational development

Participants’ ability to link their personal development with that of the organization manifested in their realization of the importance of knowing oneself in order to be able to work with others. Specifically, to understand one’s own contribution to the challenges one is facing and use that

insight to plan a response. In addition, participants described how realizing the importance of their own well-being for organizational performance brought dignity to their challenging role.

While support was found for the hypothesis, there were participants who either found the personal development aspects unnecessary or would have wanted to have more systematic work done on this front.

5.4.3 Grounding management in medicine

Participants' ability to ground management in medicine manifested itself in how participants resonated with the program content, which they described as eye-opening, highly relevant, timely, and engaging. They realized that the internal conflicts they often experienced as a confrontation between the managerial and medical domains can be bridged by applying their clinical expertise in their managerial responses. They were highly impacted by their insights that even cost-cutting requirements can be addressed by engaging their staff in improving care.

Support was found for the hypothesis in its entirety but there were also participants who felt that the content was too conceptual and they had difficulties seeing how they could apply their knowledge in practice.

5.4.4 Fostering the ability to surface and challenge mental models

Participants' ability to surface and challenge mental models manifested itself in their recurring reflections about how their perspectives on leadership and their role had changed over the course of the program. A marked difference could be seen in how participants' descriptions of good leadership shifted from being strong, clear, decisive, and problem-solving to feeling like "getting a permission" as a result of the program to engage their staff in addressing complex challenges that were impossible for them to solve on their own.

The hypothesis was supported as stated.

5.4.5 Cultivating a scientific mindset in medical leadership

The program triggered participants' scientific mindset in varying degrees. All participants shared explicit appreciation for the scientific anchoring of the program content and delivery. While many expressed a determination to apply the analytic frameworks learned in the program, it is not possible to discern if they saw these frameworks merely as tools or as a deliberate manifestation of a scientific mindset.

The hypothesis was not fully supported in the data. The assumption was that participants' clinically oriented scientific mindset could be extended to encompass a managerially oriented scientific mindset. The reality was, however, that a scientific mindset was observed primarily among participants who had doctoral degrees and continued involvement in research. In other words, given the academic nature of the setting, the mechanism should not only be about cultivating a scientific mindset in medical leadership, but also as integral to work in a university hospital.

5.4.6 Nurturing psychological safety

The participants described feeling open, trusting, vulnerable, authentic, and liberated to speak up. They thought the program team engaged and activated them, and they felt listened to. Participants expressed a hope for follow-up meetings with the same group and teachers, which alludes to a sense of learning community. Furthermore, the experience of and reflections about psychological safety helped participants realize their own role as managers in creating psychological safety among their staff and how it can influence performance and work climate.

While the hypothesis was supported as stated, there were also some accounts of not asking for support when not fully understanding the instructions either for homework or during physical meetings.

5.4.7 Anchoring the program in participants' everyday challenges

The participants described the program as highly relevant, timely and applicable to their needs. They felt engaged, challenged, confirmed, and supported. During the program, several participants shared stories of how they had already applied their learnings from the program in their work.

While this hypothesis was well supported in the data, time and logistical constraints meant that participants came from different parts of the hospital. For even greater impact and learning retention, it would make sense to try to work with groups whose members work with each other on a daily basis.

5.4.8 Establishing routines for learning

Evidence of routines for learning could be found in participants' descriptions tying the program together and remembering, including visually, the key contributions of the program. We could also observe a sense of anticipation with every new module. This suggested that participants became accustomed to the reflective check-in and check-out moments in the program.

It is important to be mindful of the fact that a program like this had little resemblance to what the participants were used to from prior experiences (lecture formats where an expert delivers information to the audience). Many new concepts were introduced, but the concepts were continually reviewed, and with every repetition, there were participants who described how they developed new insights or a better understanding.

While the hypothesis was supported as stated, the participants had varying levels of awareness about each aspect of the hypothesis.

5.4.9 Supporting presence

Given the nature of participants' roles with all their different clinical and managerial responsibilities and demands placed on them, their full attention, i.e. presence, was the scarcest of resources. Participants' presence in mind and body could be spotted in their descriptions of feeling listened to and engaged, and their gratitude for the program team's flexibility in accommodating everyone's responsibilities and needs.

Paying and giving attention are key capabilities in leading in complexity. Therefore, mindfulness research and practices were incorporated into the program. Despite the spread of this research, several participants felt that these components of the program were unscientific.

This hypothesis had weak support in the data.

5.4.10 Creating meta-cognitive learning experiences

This mechanism was observed by one of the researchers conducting direct observations of the program and by three accounts from the participants themselves which signaled that they had noticed how the program team's *way* of teaching was in line with *what* was taught, which was an explicit and active decision made by the program team.

This hypothesis had weak support in the data.

5.4.11 Revised CIMO configurations and program theory

While improvements can be made in the program delivery, the aspects that warrant elaboration are tied to what was learned from the evaluation in terms of appreciating nuances in the context and addressing the mechanisms.

In terms of context, it became evident that personal development as such was a new territory for program participants, i.e. in their past experiences in medical education and training, and in the context of other programs they had participated in, they had rarely surfaced and challenged their deeply held views about medical leadership and management, learning, and their own selves. Similarly, while many had been exposed to consultants, and could be dismissive of "management speak", they had not seriously considered the applicability and utility of the health services and management (research) vocabulary, even after several years of managerial experience. This highlights the importance of relating key concepts to the specific context. Related to that, as a program team, we took for granted the existence of a scientific mindset in a university hospital. While research anchoring was clearly valued, the ability to approach one's managerial role with a scientific mindset varied depending on the participant's previous or ongoing experience and relationship with research.

Based on the findings, four mechanisms warrant further analysis, and one further consideration. In terms of *anchoring the program in participants' everyday challenges*, it became clear that even though the content might resonate well, it does not mean that the insights and learning will and can be applied in practice. The everyday problem-solving pressures of "putting out fires" made it difficult for participants to stay true to their new insights and resist falling back into their habitual behaviors. To improve the ability to deal with those pressures, the mechanism of *nurturing psychological safety* needs further analysis. The challenge to change one's behavior gives rise to questioning the sufficiency of being from one profession and role as program participants, and suggests that the program can have more impact when groups are formed by participants from the same unit, i.e. those who actually work together. In this case, nurturing psychological safety will have even greater importance in supporting participants in changing their managerial and leadership practices. *Supporting presence* and *creating meta-cognitive learning experiences* found weak support in the data. Based on previous research in adult development, these mechanisms are relevant for learning but the program team had

varying degrees of success in activating these. In case of both mechanisms, it might be helpful for the program team to make the interventions that were expected to trigger these mechanisms more explicit by helping participants to continually reflect on, and particularly in action. Finally, based on the repeated accounts about the program team (primarily described in 5.4.1), an additional mechanism calls for consideration: *matching the context of the program to the qualities, capabilities, and qualifications of the program team*. In the specific context of this study, the ongoing changes and change management strategies were under continual (public) scrutiny and the program target group was under significant clinical, managerial, and academic performance pressures. A program team inconsiderate or ignorant of these factors, would have challenges to establish its credibility and to resonate with the participants' true learning needs. The in-depth knowledge that the program team had of the setting and of health care services and management research coupled with its own improvement orientation and sense of respect and humility for the setting, its staff and their challenges, seemed to have triggered an environment conducive to learning for experienced, often academically trained, physician leaders.

Based on how the CIMO configurations fared when compared to the data, a revised program theory could be developed.

> *In the context of a university hospital, medical leadership development needs to be supported as a deliberate practice permeated by psychological safety, learning orientation, and a scientific mindset. The program should be anchored in participants' everyday challenges and embedded in the organization's strategy as new ways of leading operations and improvement are being developed, studied, and assimilated.*

6 DISCUSSION

The aim of this thesis was two-fold: to deepen the understanding of how to better develop medical management capabilities of physicians; and to apply this understanding in the design and evaluation of a leadership development program anchored in medical practice.

The understanding of how to better develop medical management capabilities was built through Study I and Study II. Study I identified qualities, capabilities, and effective learning approaches of physician leaders with an established track record of improving health care. In Study II, the conditions that can either facilitate or impede the influence of medical leadership on organizational performance were explored. A virtuous cycle of management through medicine and a vicious cycle of medical protectionism were identified. It concluded that medical leadership needs favorable conditions to be able to have a meaningful impact on health care. Among these, medical leadership capabilities require support for their development.

The findings from Study I and II were used to design and evaluate a leadership development program in Study III. The realist evaluation design enabled a deeper understanding of how to develop medical leadership capabilities by making the underlying mechanisms in participants' learning process explicit and by resulting in a revised program theory.

> *In the context of a university hospital, medical leadership development needs to be supported as a deliberate practice permeated by psychological safety, learning orientation, and a scientific mindset. The program should be anchored in participants' everyday challenges and embedded in the organization's strategy as new ways of leading operations and improvement are being developed, studied, and assimilated.*

The following sections will discuss these findings in terms of the relationship between medicine and management; what it means to transform medical competency into medical management capability; medical leadership as a knowledge intensive endeavor; the future of

medical leadership development; implications for research and practice; and conclude with methodological considerations.

6.1 MEDICINE AND MANAGEMENT: FROM CONFLICTING TO INTEGRATIVE LOGICS

grounding /ˈgraʊndɪŋ/
: to give (something abstract) a firm theoretical or practical basis.
Source: Oxford Languages

The findings in this thesis can help managerial and medical logics to approach each other with renewed enthusiasm. Institutional logics describe how individuals, groups and organizations construct and interpret their realities and thereby shape their goals and identities, and the means of achieving them (Martin, Bushfield, Siebert, & Howieson, 2020). Medicine and management have been, and often still are, seen as conflicting institutional logics. The institutional logic of medicine rests on an autonomous medical profession able to apply expert knowledge in order to help patients. In a context of limited resources, the practice of medicine needs to be coordinated in order to improve access, disseminate knowledge, and ensure the best possible return on health care spending for the population at large (Brommels, 2010). These processes call for management of clinical processes and organizational structures in which they are embedded (Brommels, 2010). An attempt to transform this "unavoidable partnership" into something constructive can be seen in the introduction of concepts like "medical management" and "medical leadership" (Berghout, Oldenhof, Fabbricotti, & Hilders, 2018; Brommels, 2010). In the three studies in this thesis, a capability and a learning mechanism "grounding management in medicine" was identified. The capability referred to medical leaders' ability to apply their medical knowledge in order to understand and address the medical consequences of managerial decisions (Savage et al., 2018). As a learning mechanism, it enabled medical leaders to become receptive to developing their managerial capabilities. They recognized that leading and managing in health care can be a source for a renewed sense of purpose, not just another example of a colleague "going over to the dark side" (Study III).

As per the definition of grounding, "grounding management in medicine" means to give management a firm theoretical and practical basis in medicine. It transcends conflicting logics into an interdependent partnership with a reciprocal sense of purpose. Grounding management in medicine is a call for physicians to step-up as leaders who do not rely on professional autonomy and hierarchies, but are willing to reconstruct their medical identities to respond to the complex challenges inherent to evolving health systems (Berghout, Oldenhof, van der Scheer, & Hilders, 2019). The identities and goals shaped by institutional logics, however, are not easy to challenge, and can therefore not be ignored when developing medical management capabilities (Berghout et al., 2019; Martin et al., 2020).

6.2 TRANSFORMING MEDICAL COMPETENCY INTO MEDICAL MANAGEMENT CAPABILITY: A TRANSFORMATIONAL LEARNING PROCESS

Perceiving medicine and management as conflicting logics is not conducive to deep learning (Carroll & Edmondson, 2002). As the title of the thesis suggests, there is an underlying assumption that managerial and leadership capabilities should not be seen as add-ons imported from the business world, but can actually be developed by transforming the competencies that

are present in everyday medical practice. Such transformational learning occurs when participants are faced with unfamiliar challenges in unfamiliar environments (Fraser & Greenhalgh, 2001). This dynamic could be observed in the findings of Study I, where participants described as one of the most influential learning approaches the choice to leave their medical comfort zone and through that rethink how medicine works (Savage et al., 2018).

What makes such learning transformational is that it triggers insights concerning who we are and what we stand for, i.e. it has a quality to challenge professional identities shaped by the forces of the health care ecosystem, professional cultures, the organizational context, and one's individual characteristics (Berghout et al., 2019; Keijser & Martin, 2020). The realist evaluation design in Study III made it possible to make these forces explicit. The program created a learning environment that encouraged participants' vertical development where they could develop self-awareness and surface their deeply held views of management and medicine (Argyris & Schön, 1978). Anchoring the program in complexity science and double-loop learning became a strategy for facilitating "identity work", where participants' professional identities were negotiated and reproduced (Berghout et al., 2019). The importance of such a process is confirmed by adult developmental theory according to which, a shift to a leadership role requires the ability to become aware of, and at times question, the expectations of and loyalty to one's profession (socialized mind) in order to generate an internal seat of judgement from which one is able to take a stand and lead (self-authoring mind) (Kegan & Lahey, 2016, p. 63).

6.3 MEDICAL LEADERSHIP: A KNOWLEDGE INTENSIVE ENDEAVOUR

In addition to grounding management in medicine, the other leadership capability unique to medicine was to employ a scientific mindset to understand problems and measure progress (Savage et al., 2018). The combination of these two capabilities makes medical leadership a highly knowledge intensive endeavor where clinical and managerial knowledge is, what Boyatzis refers to as, threshold competency (Berghout et al., 2017; Boyatzis, 2008).

Leading in complexity as a program focused on the development of capabilities such as analysis, reflection, collaboration, and learning by using health care management research as a point of departure, i.e. the program was rich with specific medical management knowledge. In the interactions with and feedback from program participants, it became evident that the existence of such research had been largely unknown to them. When grounding management in medicine, it can be appealing for medical leaders to hold on to what is familiar – their medical knowledge and experience. However, to be able to truly ground management in medicine, one needs to complement this knowledge with knowledge in fields such as organizational development, quality improvement, economics, and innovation (Savage et al., 2018). Hospitals, especially academic health centers, should therefore not only consider clinical research, but also health services and management research, as integral to their performance and role in the society (Greenhalgh & Papoutsi, 2018).

In terms of leadership development, the importance of medical management knowledge warrants consideration of facilitators' qualifications and capabilities. As Study III suggests, in the context of academic medicine, the personal qualities of openness, curiosity and humility

may need to be complemented with academic credentials and medical degrees (Geerts et al., 2020; Rowland, 2016).

6.4 MEDICAL LEADERSHIP DEVELOPMENT: TOWARDS DELIBERATELY DEVELOPMENTAL ORGANIZATIONS

> What would it look like to "do work" in a way that enabled organizations and their employees to be partners in each other's flourishing?
> (Kegan & Lahey, 2016)

Just like with medical specialties, it is a common practice to compartmentalize organizational processes, i.e. functions tied to human resource management, care production, quality improvement, patient safety, education and research, innovation, and leadership development are all separated into respective silos. This means that leadership development as a function could develop the most eloquent of leadership development strategies and programs, but if they are separate from the organization's core work – to provide health care services, education, and research – they will ultimately be of little value.

Given the revised program theory suggested as a result of the realist evaluation, and the learning that occurred at the intersections of the program participants, the program team, the leadership development unit at the hospital, and the researchers involved, this action research project can be seen as a microcosm of what the future holds for medical leadership development. Medical leadership development should not merely be informed by evidence in health services and management research, but could be embedded in the very research process itself (Coghlan & Brannick, 2014; Greenhalgh & Papoutsi, 2018). Such an approach further necessitates that medical leadership development is anchored in the operational and strategic management of its organizational context (Blumenthal et al., 2012; Geerts et al., 2020; Keijser & Martin, 2020; Savage et al., 2020).

If medical leadership development would primarily "help people learn from their work rather than taking them away from their work to learn", what would it take to instill deliberate leadership practice (Day, 2010; Kegan & Lahey, 2016; Savage et al., 2018)? The mechanisms identified in Study III such as cultivating a growth mindset; linking personal and organizational development; fostering the ability to surface and challenge mental models; nurturing psychological safety; establishing routines for learning; and supporting presence illuminate the way forward for health care organizations to become deliberately developmental organizations (DDOs) (Kegan & Lahey, 2016).

DDOs are organizations where the growth and development of employees and the organizational performance are seen as interdependent. DDOs are dedicated to help staff stop doing, what Kegan & Lahey call, their "second job": trying to appear competent, preserve their reputations, and hide their inadequacies from themselves and others (2016). On the contrary, learning focused practices and organizations see weaknesses and mistakes as opportunities for personal growth. This is facilitated through constructive destabilization, supporting staff to get pass their defensive reactions, closing the gap between desirable actions and actual behavior, creating a shared sense of responsibility (every person is responsible for the outcome), and making time for growth (Kegan & Lahey, 2016). Such practices are made possible by a culture characterized by accountability, transparency and support (Kegan & Lahey, 2016).

In general, the high-performance culture of medicine is not so conducive to the establishment of growth mindsets. However, there can be a potential leverage point in the traditional method of teaching in surgery – the principle of "see one, do one, teach one" (Kotsis & Chung, 2013). Such a "full circle" was visible in effective physician leaders' learning approaches identified in Study I – they developed their own leadership capabilities by observing other leaders, learning by doing (i.e. being leaders), and by mentoring and teaching others (Savage et al., 2018). The challenge though, is that the kind of leadership that can be observed and experienced in health care might not be the ideal (Padilla, Hogan, & Kaiser, 2007; Savage et al., 2020). Therefore, the way leadership is taught needs to enable the possibility to identify and challenge deeply held views of leadership and management so that one could *unlearn* what has been learned and build a new identity for what it means to be a medical leader. One example of the unlearning that needs to occur is that medical education and training has systematically ignored the person practicing medicine, i.e. the focus is on what one does, not who one is (Frich et al., 2014; Rowland, 2016). Health professionals' knowledge, skills and judgement are welcomed at work, but not their insecurities, fears, and aspirations (Kegan & Lahey, 2016). Yet it is the insecurities, fears, and aspirations that function as a lens through which one views and interprets the world and thus become integral to the way one practices medicine and leadership. To separate personal and organizational development, robs medical leaders of the opportunity for greater impact on the lives of their patients and the success of their organizations (Heifetz et al., 2009).

Based on this analysis of the findings, I suggest that individual qualities of willing medical leaders, their participatory leadership practices, and the organizational environment that nurtures learning and development can be woven together through the deliberate practice of grounding management in medicine (Figure 9).

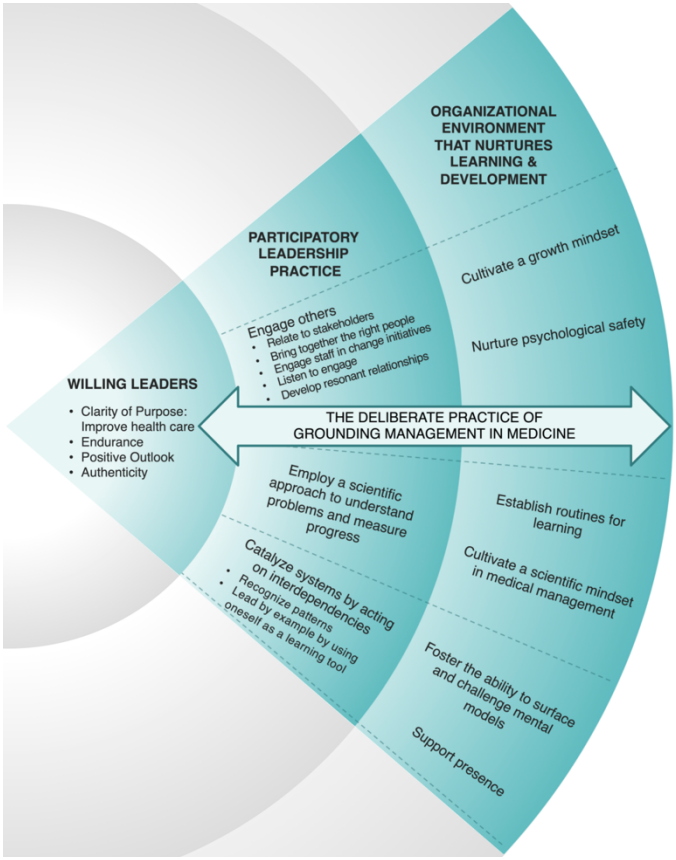

Figure 9. The deliberate practice of grounding management in medicine.

6.5 IMPLICATIONS FOR RESEARCH AND PRACTICE

The findings of this thesis project have implications for actors on multiple levels and are presented in terms of what they mean for the professionals working on these different levels.

6.5.1 Individual medical leaders

The changes that health systems are and will be facing call for your leadership. You have a choice to either meet your career path with a sense of being a victim of everchanging circumstances or to step forth and extend your professional practice by always striving to improve it. Just like you seek to get better at helping your patients, seek to get better at how you work with others, how you speak up and take responsibility when something can be improved, and stay curious and reflective about your own role in the challenges you are facing. You can trust that as you get better in your own leadership, you will get better at helping your patients.

6.5.2 Senior leadership teams

You are visible even when you are invisible. Your leadership sets the tone for how the rest of the organization collaborates, learns, performs, thrives, or withers. The way you meet each other at the top, is reflected in the way management teams meet each other at the lower levels in the hierarchy. You will help the organization to get better by getting better first, i.e. if you would like the rest of the organization to work better across organizational boundaries, reflect on how you work in your own team. You are a group of highly experienced professionals with

impressive academic and medical credentials. In this era of volatility, uncertainty, complexity and ambiguity, use the credibility entrusted to you not to lead from your power but to lead with a learning focus, i.e. learn and help your organization to learn forward. You can trust that as you get better in your own leadership, you will create an organization better equipped and able to help its patients.

6.5.3 Policy makers

You have a task to steer whole health systems in a direction that would best improve population health in the context of limited resources. The findings from Study II offer a perspective which might ease your burden: the more you push (i.e. command and control), the more the various actors and health professionals will push back (i.e. medical protectionism). The findings of this thesis serve as an invitation to replace the rhetoric of control through top-down performance requirements with engaging medical leadership in co-creating future health systems. And no, the answer does not lie in creating more working groups, but in how the groups work and team together. You can trust that as you get better in your own leadership, you create more conducive environments for true multi-stakeholder partnerships and system-wide learning, which in its turn strengthens senior leadership teams across system actors.

6.5.4 Leadership development professionals

Based on the findings in this thesis, I invite you to rise to the occasion by making traditional programmatic leadership development obsolete. It requires a move away from programs where you get to stand center stage, tell others how to lead, and conclude with a standing ovation. I invite you to reframe your sense of reward and purpose and start seeing yourself as a facilitator who carves out space for medical leaders to learn as they work on their leadership challenges. The quality of that space is dependent on the interior quality of your own presence (your intentions, qualities, capabilities, and credibility). Therefore, embrace the reality that as you help others to learn and grow, you will inevitably (need to) learn and grow yourself. You can trust that as you get better in your own leadership, you will enable medical leaders to become better at their leadership.

6.5.5 Researchers

The field of medical leadership and its development needs bold research that does not shy away from the complexities inherent to causal attribution. Longitudinal studies which use multiple methods are desirable to expand the knowledge base about how to best develop medical leadership. The mechanisms and revised program theory identified in Study III warrant further testing in similar and other contexts.

Findings from the literature review (Study II) allude to a lack of studies that explore the consequences of major health workforce trends on medical leadership, e.g. feminization, internationalization, and change of generations (Savage et al., 2020).

When all the findings of this thesis are combined, they resonate with the new, more participatory leadership paradigms that have been proposed for academic medicine (Lieff &

Yammarino, 2017). This suggests that there is merit in further exploring the relevance of formulating a theory of medical leadership.

Based on the experiences throughout this thesis I would encourage more researchers to cross the boundaries of academia and work closely with practitioners in order to generate knowledge that is both valid and vital. The future of medical leadership development can include an opportunity for academic medical centers to create action research collaboratives around their leadership and organizational challenges so as to be able to design responses to their own complex challenges, while simultaneously contributing to a scientific base of knowledge (Coghlan & Brannick, 2014).

These proposed directions for research imply that, as researchers, we need to expand our scientific comfort zones. We can trust that as we get better in our own leadership, we will be better able to initiate and lead more complex research endeavors that will generate more value to the communities of practice and scientific inquiry.

6.6 METHODOLOGICAL CONSIDERATIONS

> The strength of evaluation research depends on the perspicacity of its view of explanation
> (Pawson & Tilley, 1997, p. 219)

The past couple of decades have seen a significant increase in publications about what scientific rigor in action research actually means (Levin, 2012). From the viewpoint of a positivist paradigm, the immediate concerns would be tied to threats of bias and the generalizability of findings, whereas the social constructivist lens suggests a critical reflection about the trustworthiness and transferability of the findings (Brydon-Miller et al., 2003; Guba & Lincoln, 1994).

In terms of trustworthiness, Levin (2012) points to four factors that warrant elaboration: research partnering, researcher bias (reflexivity), standardized methods, and alternative explanations.

6.6.1 Research partnering

Research partnering refers to the importance of involving multiple people in the research process. This is due to the demanding nature of action research and to ensure reflective and critical interpretation of data (Levin, 2012). Action research involves a dual goal of addressing organizational challenges and contributing to addressing a scientific knowledge-gap (Coghlan & Brannick, 2014). I was fortunate to have three separate learning-oriented teams to work with: my PhD supervisory team, the program team, and the leadership development unit at the hospital.

The PhD supervisory/research team served as an arena for scientific discussions, in particular around the choice of research questions, study designs, and methods for data collection and analysis. Two members of the supervisory team were also members in the program team, whereas the other two members of the supervisory team were not involved in the program design and delivery and could therefore ensure their non-partisan contributions to the evaluation study. The supervisors were always critically assessing my interpretations through active engagement in data collection and analysis.

The program team was responsible for the program design and delivery, while maintaining close contact with the leadership development unit at the hospital. My role was to lead the program development and delivery process. In addition, my careful study of the participants' work context enabled me to ensure that our ideas were always anchored in the participants experienced realities and their challenges. As we were all engaged in research in medical leadership, the program team became the arena for interpreting research findings for the context of the program. This meant that all program design and delivery aspects were permeated with scientific debate that continuously challenged my interpretations. We had an iterative way of working by revising each module after each teaching occasion (three iterations) and designing each subsequent module after the previous one was completed. We were committed to make use of as much evidence as possible, even if it required us to venture to new and unknown fields of research. In addition, we were committed to continually challenge our way of teaching and facilitating to better address the mechanisms identified in Study III. This was no easy task, and to make this possible, three of us from the program team attended a program particularly designed to support the facilitation of complex processes.

The leadership development unit had an important role as the voice of the setting. As described in 4.2.3, it took nearly two years of regular meetings where we discussed the evidence base in effective leadership development and reflected on the specific events and needs of the hospital. After each meeting, the program team left with an increased sense of understanding of the context and the members of the leadership development unit left with insights about how to evolve their role at the hospital. Over time, as I started to attend the unit's weekly meetings, I was able to organically contribute with my observations and insights from research. As a result, the research of thesis has had an impact beyond the Leading in complexity program and has influenced and shaped most of the work that the leadership development unit is currently involved in. A major contributor to this dynamic was the way the leadership development unit was, and still is, led – the team has been accepting and trusting of the program team's emergent design and learning process and not interfered in the details but instead focused on aligning the intentions and establishing a container conducive to learning.

6.6.2 Reflexivity

As researchers we need to be systematic about explicating our potential risks for bias. While Levin (2012) calls it researcher's bias, other authors refer to it as reflexivity (Mays & Pope, 2000).

As I alluded to in the prologue, my past experiences have had a significant impact on this thesis project. I did my undergraduate degree in public administration and political science and my master's degree in health economics, policy and management. Thus, I have been schooled in social sciences and both of my degree projects employed qualitative methods (interviews and observation). My master's thesis project had an action research design focused on studying and improving the way leadership was taught to senior medical students and young doctors.

My professional experience consists primarily of (international) managerial roles where I had the chance to not only read about cutting-edge leadership theories, but to test them in practice. I was given the opportunity to use some of these insights while working as a research assistant with projects that were using complexity science and systems thinking to analyze the Stockholm region health system and the Swedish innovation system. These combined academic and

professional experiences led me to design this thesis project as an action research project that was focused on medical leadership and applied primarily qualitative research methods. Moreover, my master's thesis and work as a research assistant enabled me to develop an in-depth understanding of the Swedish health system, in particular the Stockholm region. In terms of my understanding of medical practice, the absence of a medical degree allowed me to adopt a beginner's mind and conduct observations and interviews with allowances to ask "stupid questions".

Not having a medical background can also be seen as a weakness, as I ran the risk of not being able to fully understand and resonate with what it takes to be a medical leader. I addressed this through teaming with those that had a medical background and data gathering, such as shadowing physicians. Since the stakes were high, I did not feel my past experiences would be enough to be able to conduct this project with the intended rigor. Therefore, I took steps to mitigate the risks. I enrolled in doctoral courses in medical education research, leadership research, action research, and cognitive work methods. All these courses were key to the methodological decisions made throughout the project.

In terms of the issues I saw as important and the potential findings I was hoping for, it is illustrative to return to my individual study plan from when I was admitted to my doctoral studies. The administrative routines do not accommodate emergent strategies characteristic to action research and thus everything needed to be planned at the onset (to my advantage at the moment). I came into this project with a belief that if we are able to help physicians resonate with managerial thinking and the associated foreign vocabulary through finding the ways they can use their medical competencies to address managerial situations (by using cognitive task analysis), and if we apply all the existing evidence in effective leadership development (design a program), we are able to make significant contributions to improving medical leadership capabilities (as assessed by the Kirkpatrick model of program evaluation). I had the belief that we could create a near perfect program. As this thesis describes, I have taken quite a different learning journey. Since very little went according to plan, every step of inquiry led me to reconsider my own underlying assumptions and encouraged critical and analytical reflection. Most fortunately, there were also two other doctoral students who were in the midst of their respective participatory research projects. Interactions with them became an additional forum that supported deliberate reflection-in-action and continuous (and fierce) note-taking as I was making progress in my project.

As described in section 4.2.3, the collaboration with the hospital became increasingly intense and after the program concluded, I was employed by the hospital. However, since my work in the leadership development unit itself has not been the research object and the leadership program had been concluded, I did not feel that my role as a researcher had been compromised. Importantly, I had the opportunity to present findings from the program at various forums at the hospital, but since the hospital has begun another round of structural changes and the role of PFCs has been removed, I was under no pressure from decision makers to talk about the program in any specific way. On the contrary, the insights from the experience and the research on the program have significantly contributed to the way the leadership development unit works today.

In addition to reflecting on how I might have influenced the findings of this thesis, it is important to reflect on the risk of bias that the program team might have introduced to the research process. Since we have had years of shared teaching and research experience, we have developed many shared mental models about medical leadership. For example, the anchoring in complexity science cannot be taken for granted, and likely colored some of our interpretations. At our meetings, we therefore frequently engaged in discussions about our interpretations, returned to the raw data, reflected on alternative theories, and challenged each other to develop new models, lines of thought, or teaching approaches.

6.6.3 Standardized methods

Action research aims to address challenges in a way that the "problem owner" and researchers learn and reflect together (Levin, 2012). While the hospital owned the challenge of wanting to develop a specific group of medical leaders, they chose to engage an external partner who would (in close collaboration) design and deliver a program for them. This meant that the program team became part of "owning the problem". The program team and the research team were to a large extent the same people. Thus analyzing and interpreting the data together was inherent to the setup and can be described as the teacher-learner process of realist evaluation (Pawson & Tilley, 1997, p. 217). While our role as a program team and as researchers was independent from the hospital, a co-generative process for learning and reflection was made possible by my participation in the leadership development unit's weekly team meetings (Levin, 2012). Program participants, while being engaged learners, were not the "problem owners". They were therefore not part of analyzing and interpreting the data but, instead, acted as discussants of the findings. These discussions, and the discussions with numerous other groups of doctors in Sweden and internationally, led to refining the results sections of Study I and II.

If the circumstances would have allowed, there could have been a purer form of action research where program participants would have been involved in conducting and analyzing interviews about what makes effective medical leaders, analyzed evidence of how to develop these attributes, and co-designed a program to help themselves get better (Coghlan & Brannick, 2014).

To ensure construct validity, multiple theories, and methods for data collection and analysis were used across the thesis (Levin, 2012; Yin, 1994). A testament of construct validity is how each study built upon the findings of preceding studies. As the thesis focused on developing a deeper understanding of how to better develop medical leadership, various qualitative methods that enabled us to anchor the empirical data in participants' actual experiences were sought. In addition, we chose realist evaluation as a design for Study III as it accommodates working with a rather complex and unstructured data set (Levin, 2012; Pawson & Tilley, 1997). Study I and II, in combination with the contextual observations prior to the program, enabled us to approach program design with realist evaluation in mind. This is rather rare, as most realist evaluations conclude with a program theory and CIMO configurations that would retrospectively explain the program outcomes. We had the luxury of being able to explore the CIMO configurations prospectively through three iterations of the program, and combined with evaluation data from participants, contribute with a revised program theory for medical leadership development.

In light of “golden standards” in program evaluation, the design did not have aspects of pre- nor post-post measurements of program impact (Geerts et al., 2020). Neither did it look at organizational effects. This was a conscious choice as the focus of the evaluation was on understanding the mechanisms underlying participants’ learning and not on whether the program "worked" (Dalkin et al., 2015). Another limitation in evaluation is that we used focus group interviews as a key data source, i.e. self-reported data on perceived learning and benefits (Geerts et al., 2020). In order to complement this, we triangulated data from my program development notes, direct observation notes, and the free-text answers in summative evaluation forms. All the same, there can be an added value from combining the realist evaluation with traditional ways of evaluation to generate a more rigorous account of the program outcomes.

6.6.4 Alternative explanations

Development of alternative explanations is a way to create critical distance for the researchers by coming up with multiple models of explanation (Levin, 2012). The primary way to work with alternative explanations was the realist evaluation design which with its CIMO configurations forced us to continuously explicate our line of reasoning for each detail of the program and then to seek to prove or disprove these configurations against multiple sources of data. We addressed the risk for bias in this process by making sure that two of the co-authors on Study III would be independent of the program design and delivery. This does not, however, eliminate the possibility that a different group of researchers would have arrived at alternative explanations.

6.6.5 Transferability

This thesis resulted in a program theory about how to develop medical leadership in academic medicine. The very nature of a realist evaluation design is that it will not ensure that the application of this program theory and accompanying mechanisms would predict success in other programs (Pawson & Tilley, 1997). The intention is to bring us closer to understanding complex social interventions (Pawson & Tilley, 1997). The CIMO configurations reflect our current state of understanding and can thus contribute to theoretical developments, which can in turn inform future programs (Pawson & Tilley, 1997, p. 86). The granular description of each CIMO configuration can help the reader to make judgements about contextual differences and thereby improve the transferability of the findings.

7 CONCLUSION

Medical competency can be transformed into medical leadership capability by grounding management in medicine through deliberate leadership practice permeated by psychological safety, a learning orientation, and a scientific mindset. Medical leadership development should be anchored in participants' everyday challenges and embedded in the organization's strategy as new ways of leading operations and improvement are being developed, studied, and assimilated.

The view of management and medicine as conflicting logics can be questioned. When jointly purposed to improve health care, they have clearly established the value they can create for health systems, service providers, and patients.

This thesis is an illustration of how theories and research from the fields of complexity science, organizational and adult development, and leadership can cross-pollinate health care services and medical leadership research and development. Thus, the different domains have valuable lessons for each other, i.e. rather than asking, "Is there evidence for this in health care?", we should more frequently ask ourselves, "What could this mean in the context of health care?" Such reflective inquiry would help deepen the understanding for both management and medicine. Based on the research process followed in this thesis, it could take the form of creating action research collaboratives around university hospitals' leadership and organizational challenges so as to design responses to their own complex challenges while contributing to the scientific knowledge base in medical management.

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(Whyte, 2015)

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10 APPENDIX 1: INTERVIEW GUIDE STUDY I

Purpose: to explore how one becomes an agent of positive change in health care.

Introduction

Thank you for sharing your time to take part in this interview, the purpose of which is to explore how different individuals have become successful in leading and contributing to positive change in health care. The stories collected from the interviews will inform the development of a degree program in medical management for future doctors and may be used in a scientific publication.

The interview will take approximately one hour. To support the analysis, I would like to record the interview. Is that ok with you? You may at any time decide to stop the interview. All data will be handled confidentially and the utmost care will be taken to ensure your anonymity.

I. Appreciation (purpose is to get the person open up and get into the appreciative/positive way of thinking)

1. Let's start with what it is you do. Could you help me to understand more about your work – what do you do?

2. What gets you most excited in your work right now? What makes it a "kick"?

3. What do you value/appreciate most in your work?

4. Which of your personality traits do you appreciate most in your work?

II. Inquiry (purpose is to develop a deeper understanding of what has happened, i.e. what has enabled the interviewee to become the person they are today?)

5. Now, please tell me about a time when you believe *you excelled* in contributing to or leading a positive change in your work. What was it about? What happened? Who was involved, what were they doing? What was your *role*?

6. Where do you find the most support and inspiration to continue giving your best in improving the experience of health care for colleagues and patients?

7. Beyond this story, let us *imagine* I had a conversation with people who know you quite well and I asked them to share the three best qualities they see in you and the capabilities you bring to the leadership of change. What would they say? *Provide summary.*

8. How have you acquired these qualities and capabilities? Which have been the most useful and effective practices and learning experiences for you?

Summarize the section.

III. Future (purpose is to understand what can be done differently)

9. Reflecting over the conversation we have had thus far, in particular the qualities and capabilities that have been essential in your success, what would your recommendations be for supporting the development of these qualities and capabilities among future health care professionals?

10. Looking into the future, what role do you see for medical universities in supporting the development of these qualities and capabilities? Can you give an example of how this could be done? *Provide summary*.

11. If *you personally* were to encourage others to develop these qualities and capabilities, what approach would you take?

12. Is there anything you would like to add?

13. Would you be interested in supporting the development of an MBA-like program for doctors and medical students?

14. And a final, last question: is there anyone else you think we should speak with?

Closing

Thank you for sharing your thoughts. Please feel free to e-mail me in case of any questions or if you have any further thoughts. We will get back to you with the findings from these interviews.

11 APPENDIX 2: DETAILED OVERVIEW OF THE ARTICLES INCLUDED IN STUDY II

No	Reference	Study design	Country	Setting	Study participants
1.	Perreira, T., *et al.* (2019)	Concept analysis using literature review	N/A	N/A	N/A
2.	Nieuwboer, M., *et al.* (2019)	Systematic literature review	N/A	N/A	N/A
3.	Boyle, T., *et al.* (2019)	Semi-structured interviews (n=10)	Canada	Hospital	Senior health care executives
4.	Vazquez, C. (2019)	Semi-structured in-depth individual interviews (n=4)	USA	Non-profit teaching hospitals	Physician leaders responsible for pediatric heart programs
5.	Keller, E., *et al.* (2019)	Qualitative mixed methods: Semi-structured interviews (n=40) and observations	USA	Academic hospital	Physicians Administrators
6.	Berghout, M., *et al.* (2019)	Ethnographic study (n=23): Observations (100 hours)	The Netherlands	Hospital	Participants of a medical leadership development program (all physicians)
7.	Van de Riet, M., *et al.* (2019)	Interview study (n=39)	The Netherlands	General district hospital	Physicians Nurses Laboratory technicians Managers
8.	Jorm, C., *et al.* (2019)	Scoping study: Literature review, interviews (n>100), survey (n=1800)	Australia	Health system	Clinicians Executives
9.	McHugh, S. *et al.* (2019)	Multiple case study (n=6): Documents, key stakeholder interviews (n=36)	Ireland	Health system	Managers, patient advocates, doctors, nurses, private ambulance representatives, general practitioners, private hospital representatives, hospital campaigners, local media representatives, local politicians
10.	Ahnfeldt-Mollerup, P., *et al.* (2018)	Survey (n=352), registrar of quality reports	Denmark	Primary care	General Practitioners
11.	Kampstra, M., *et al.* (2018)	Systematic literature review	N/A	N/A	N/A
12.	Berghout, M., *et al.* (2018).	Qualitative: observations and document analysis	The Netherlands	Health system	Opinion-making physicians
13.	Nzinga, J., McGivern, G., & English, M. (2018).	Case study: ethnographic observation (480 h),	Kenya	Hospital	Mid-level departmental leaders, nurses in charge of inpatient wards, senior managers, frontline workers

		interviews, focus groups (n=61)			
14.	Yanchus, N. J., *et al.* (2018).	Qualitative survey comments	US	Health system	Physicians
15.	Berghout, M. A., *et al*. (2017).	Literature review	N/A	Hospital	Physicians in managerial or leadership roles
16.	Bharwani, A., *et al.* (2017).	Interview study (n=77)	Canada	Academic medicine system	Trainees, mid-level university leaders, senior medical clinical leaders, senior university leaders, medical scientists, senior executives and directors
17.	Canaway, R., *et al*. (2017).	Semi-structured interviews (n=17)	Australia	Hospital	Senior management
18.	Clay-Williams, R., *et al*. (2017).	Literature review	N/A	N/A	Senior management
19.	Dickinson, H.*et al*. (2017).	Case study: 9 cases, 150 interviews	UK	Hospital	Doctors, nurses and managers
20.	Giri, P., Aylott, J., & Kilner, K. (2017).	Quantitative: survey study (n=249)	UK	N/A	Faculty of Occupational Medicine
21.	Ireri, S. K., *et al*. (2017).	Multi-method: 25 interviews, survey (n=292)	UK & Kenya	Hospital	Middle and senior management
22.	Jones, L., *et al*. (2017).	Qualitative: interviews (n=65), observations (60 hours), document analysis	UK	Hospital	Senior management
23.	Kerrissey, M., *et al*. (2017).	Case study: 16 clinics, 18 interviews	US	Primary care	All staff, interviews with heads of clinics
24.	Macinati, M. S., Cantaluppi, G., & Rizzo, M. G. (2017).	Multi-method study: literature review, performance data, unstructured interviews, questionnaire n=72	Italy	Hospital	Physicians
25.	Spehar, I., *et al*. (2017).	Interview study: Focus group interviews with 17 GPs	Norway	Primary care	Physicians
26.	Storkholm, M. *et al*. (2017).	Interview study (n=30)	Denmark	Hospital	Staff and managers
27.	Waring, J., & Crompton, A. (2017).	Case study: non-participant observation's (90 hours), semi-structured interviews (n=34), focus groups (n=3) and document analysis	UK	Hospital	Senior managers, senior medical and nursing leaders, quality and safety managers, senior human resources, communications and operations managers, nurses, doctors, departmental managers, and support workers.
28.	Clark, K. D., *et al*. (2016).	Case study: Observational cross-case comparative study (19 practices)	US	Primary care	Staff and leaders at all levels

29.	Denis, J.-L., & van Gestel, N. (2016).	Qualitative: Document analysis	The Netherlands and Canada	Health system	N/A
30.	Kristensen, S., *et al*. (2016).	Intervention study: A repeated cross-sectional experimental study, 2 surveys	Denmark	Hospital	Staff and managers
31.	Lega, F., & Sartirana, M. (2016).	Qualitative: literature review, action-research and field investigations	Italy	Hospital	N/A
32.	Macinati, M. S., Bozzi, S., & Rizzo, M. G. (2016).	Multi-method: Literature review to develop hypothesis, performance data, unstructured interviews, questionnaire (n=65)	Italy	Hospital	First and middle managers
33.	Macinati, M. S., & Rizzo, M. G. (2016).	Survey n=53	Italy	Hospital	General manager, administrative officer, controller, clinical managers
34.	Noordegraaf, M., *et al*. (2016).	Qualitative: document analysis, observation, interviews (n=38)	The Netherlands	Hospital	Residents and program directors
35.	Sarto, F., & Veronesi, G. (2016).	Literature review	N/A	Hospital	Senior management
36.	Bresnen, M., *et al*. (2015).	Qualitative: n=85 interviews with 68 respondents, 54 hours of observations	UK	Two hospitals and a trust providing mental health and community services	Medical, general, and functional managers.
37.	Burgess, N., *et al*. (2015).	Interview study (n=91)	UK	Hospital	Middle managers
38.	Martin, G., *et al*. (2015).	Interview study: 56 focus group interviews, 46 individual interviews, 25 in-depth individual interviews	UK	Primary and secondary care	Staff and managers
39.	Mascia, D., *et al*. (2015).	Survey, n=791	Italy	Hospital	Physicians
40.	Quinn, J. F. (2015).	Survey, (n=677)	US	N/A	Senior managers
41.	Spurgeon, P., *et al*. (2015).	Survey, UK 30 trusts, Australia and New Zealand 4 sites	UK, Australia and New Zealand	Hospital	All staff
42.	Tsai, T. C., *et al*. (2015).	Survey (n=722 in the US, n=132 in the UK)	UK & US	Hospital	First line and senior managers
43.	Damschroder, L. J., *et al*. (2014).	Interview study (n=62)	US	Hospital	Network-level and facility-level executives, managers, front-line providers and staff

44.	Macinati, M. S., & Rizzo, M. G. (2014). *et al*.	Questionnaire (n=70)	Italy	Hospital	First and middle managers
45.	Moffatt, F., Martin, P., & Timmons, S. (2014).	Qualitative: Document analysis	UK	Health system	N/A
46.	Nelson, M. F., *et al*. (2014)	Intervention study	US	Hospital	Physicians, nurse managers, administra- tion, and board members
47.	Nicol, E. D., Mohanna, K., & Cowpe, J. (2014).	Interview study (n=20)	UK	Health system	Senior management
48.	Lega, F., Prenestini, A., & Spurgeon, P. (2013).	Literature review	N/A	N/A	N/A
49.	Fulop, L. (2012).	Interview study (n=31)	Australia	Hospital	Clinical managers
50.	Howard, J., *et al*. (2012).	Case study: observation notes, meeting recordings, interviews (n=8)	US	Primary care	Physician leaders
51.	Mallon, W. T., & Buckley, P. F. (2012).	Literature review	N/A	Hospital	Senior management
52.	Numerato, D., Salvatore, D., & Fattore, G. (2012).	Literature review	N/A	N/A	N/A
53.	Spehar, I., Frich, J. C., & Kjekshus, L. E. (2012).	Qualitative: In-depth interviews (n=30) and participant observations (n=20)	Norway	Hospital	First line and middle managers
54.	Choi, S., *et al*. (2011).	Single case study: 22 interviews, 22 hours of observations and document analysis	Sweden	Hospital	Senior management
55.	Ham, C., *et al*. (2011).	Interview study (n=20)	UK	Health system	Senior management
56.	Lin, B. Y.-J., *et al*. (2011).	Survey (n=448)	Taiwan	Hospital	Staff and middle managers
57.	Snell, A. J., Briscoe, D., & Dickson, G. (2011).	Interviews (n=51)	Canada	N/A	Physicians who have attended leadership development courses
58.	Spurgeon, P., Mazelan, P. M., & Barwell, F. (2011).	Survey: (n=30 secondary care trusts)	UK	Secondary care trusts	Physicians
59.	Albert, K., Sherman, B., & Backus, B. (2010).	Intervention study	US	Hospital	First line and middle managers

60.	Hayes, C., *et al.* (2010).	Case study of four quality leaders	Canada	Hospital	Middle managers
61.	von Knorring, M., de Rijk, A., & Alexanderson, K. (2010).	Interview study (n=18)	Sweden	Health system	Senior management
62.	Jiang, H. J., *et al.* (2009).	Quantitative (n=562)	US	Hospitals and health system	Senior management
63.	Johansen, M. S., & Gjerberg, E. (2009).	Multi-method (interviews 44; survey 166)	Norway	Hospital	Managers from different levels
64.	Waring, J., & Currie, G. (2009).	Case study (observations 200hrs, semi-structured interviews n=43)	UK	Hospital	Hospital managers, senior physician leaders, nursing director, senior physicians, staff
65.	Epstein, A. L., & Bard, M. A. (2008).	Interview study (n=68)	US	Hospital	Middle managers
66.	Ham, Chris, & Dickinson, H. (2008).	Literature review	N/A	N/A	N/A
67.	Lega, F. (2008).	Qualitative: Literature review, action-research and field investigations	Italy	Health system	N/A
68.	McAlearney, A. S. (2008).	Interview study (n=200)	US	Health system	Hospital and health system managers and executives, academic experts, consultants, association reps, vendors of leadership development programs, program participants
69.	Menaker, R., & Bahn, R. S. (2008).	Survey (n=314)	US	Hospital	Physicians and senior managers
70.	Shipton, H., *et al.* (2008).	Survey (n=17 949)	UK	Hospital	Staff
71.	Sorensen, R., & Iedema, R. (2008).	Ethnographic study: observation, interviews, focus groups (n=89)	Australia	Hospital	Medical managers, physicians, nursing managers, nurses, patients, other external palliative care specialists
72.	Waring, J. (2007).	Case study (observations 200hrs, semi-structured interviews n=43)	UK	Hospital	Hospital managers, senior physician leaders, nursing director, senior physicians, staff
73.	Prybil, L. D. (2006).	Quantitative (14 hospitals)	US	Hospitals	N/A

12 APPENDIX 3: FOCUS GROUP INTERVIEW GUIDE STUDY III

Aim: to explore how leadership development for first line physician managers can be anchored in their everyday work and influence their understanding and leadership practice

Learning outcomes for the program

As a result of this program, the Patient Flow Managers should be able to:

- Manage through clarity of purpose
- Identify, analyse, and address challenges by understanding how activities, resources, and partners can be coordinated, including exploring the evolving role of patients
- Work with others to develop a collaborative organization by learning and responding to complex challenges while maintaining focus and finding the energy to endure
- Develop one's own and the organization's ability to continually learn and renew.

Interview guide

Jag heter XX och är forskare vid Karolinska Institutet och har fått i uppdrag att hålla den här fokusgruppsintervjun som ett led i Mairi Savages forskningsprojekt. Syfte med forskningen är att utforska hur ledarskapsprogrammet, som har som avsikt att grundas i ert dagliga arbete, har bidragit (eller inte) till er utveckling som chefer. Vi har en timme till vårt förfogande och jag kommer att ställa frågor som jag vill att ni tillsammans resonerar och svarar på. Ni kan tycka lika eller olika och komma med olika input och det finns inga rätt eller fel svar. Metoden gruppintervju använder vi för att vi vill att ni använder varandra i samtalet till att tex. bli påminda om vad ni varit med om i programmet eller att ni blir inspirerade att utveckla era tankar kring era lärdomar.

Frågorna är öppna för att ni ska kunna beskriva era tankar fritt. Deltagandet är frivilligt. Ni kan närsomhelst välja att avbryta intervjun. All data kommer att behandlas konfidentiellt och inspelningarna kommer att raderas efter transkribering. Deltagandet i intervjun är anonymt på det sättet att ni inte kommer nämnas vid namn i något producerat dokument. Endast vår forskargrupp på MMC kommer att ha tillgång till intervjumaterialet. Vi kommer att sammanfatta resultaten i en vetenskaplig artikel.

Jag vill gärna spela in vårt samtal då det underlättar det fortsatta arbetet, är det okej med er?

1. Kan ni säga något om hur ni har upplevt att delta i programmet?
2. En utgångspunkt med programmet var att det bygger på er vardag, upplever ni att programmet faktiskt byggde på/var förankrat i er vardag?
    a. Kan ni ge några exempel på när det lyckades/syntes respektive inte lyckades.
3. Hur skulle ni säga att programmet har bidragit till er utveckling som PFC?
    a. Vad lyckades ni tillämpa till ert arbete?
    b. Vilka är de viktigaste teoretiska kunskaperna ni tar med er?
    c. Har ni haft utmaningar i era arbeten som PFC som ni kunna hantera tack vare programmet?
    d. Är det något ni *planerar* att göra annorlunda eller genomföra i ert arbete som ett resultat av programmet?
4. Finns det förändringar ni veta göra men inte lyckats med? Ge exempel.

    a. Vilka hinder stötte ni på?
    b. Hade kursledning kunnat göra något för att underlätta?
5. Har ni lärt er någonting oväntat, något som ni inte förväntade er av ett ledarskapsprogram?
6. Tror ni att andra (till ex patienter, kollegor, chefer) i er omgivning har uppmärksammat er utveckling? Utveckling/förändring av verksamheten?
7. Vad tror ni programmet kommer ha för effekter i er verksamhet på lite längre sikt?

Här är kursens lärandemål (visa dem på papper):

8. Hur vill ni koppla det ni har lärt er och det förändringar ni genomfört till programmets lärandemål? Är det något mål ni inte upplever att ni uppnått?
9. I höst kommer kursledarna att starta upp nya kursomgångar och all feedback för att utveckla kursen är välkommen. I utvärderingarna efter varje kursmodul fick ni lämna förbättringsförslag på varje modul, men nu undrar vi om ni har några övergripande förbättringsförslag för programmet som helhet?
10. En del av den återkoppling vi fått in rör xx och xx – är det något ni vill kommentera eller utveckla?
11. Ni har haft en del uppgifter att genomföra mellan träffarna, hur har det fungerat/hur har ni upplevt dem?
12. Nu när vi har pratat om programmet och vad ni fått mer er, hur vill ni beskriva den röda tråden genom programmet?
13. Nu har vi fått ställa de frågor vi hade tänkt ställa, är det någonting som ni vill tillägga?